(2.)

OBSERVATIONS
AND
DISCOVERIES
MADE UPON
HORSES,
WITH
A New Method of Shoeing.

CONTAINING,

I. The exact Anatomy of a Horſe's Foot.
II. The Hiſtory of the Cauſes and Seat of different Diſeaſes, ſaid to be in the Hip, or Shoulder, which lame the Horſe, and are demonſtrated to be in the Foot.
III. The extraordinary Effects of the Powder of Puff-balls, in the ſtopping of Blood in a few Minutes; and the Arteries cicatriſed by this Means only.
IV. The new Method of ſhoeing Horſes, both for preſerving their Feet, and to prevent their ſlipping upon ſmooth Pavements.

By the Sieur LA FOSSE,
FARRIER to the King of FRANCE.

Preſented to the Royal ACADEMY of SCIENCES.

Illuſtrated with ſeveral COPPER PLATES.

DUBLIN:
Printed for C. WYNNE at the *Parrot* in *Caple-ſtreet*, and
J. EXSHAW at the *Bible* in *Dame-ſtreet.*
M, DCC, LV.

EXTRACT *from the* REGISTRY *of the* ACADEMY *of* SCIENCES.

WE *have, by* **Order** *of the* Academy, *examined, a Manuſcript of the* Sieur la Foſſe, *Farrier of the King's Stables.*

And for which We cannot avoid giving the Sieur la Foſſe *due Praiſe for his Zeal and Capacity in his Endeavours to perfect and extend the Knowledge of his Profeſſion. We think theſe* Memoirs *merit being printed among the Collection of the Papers communicated to the* Academy.

MORAND FERREIN.

I *Certify the above Approbation to be agreeable to the Judgment and Intention of the* Academy.

GRANDJEAN DE FOUCHY.

A
TABLE
OF
OBSERVATIONS.

1. THE anatomical plate of the diſſected parts of a horſe's foot, with their ſeveral figures croſſed by ſix parallel right lines, the ſpace of which ſhews, upon every part, the importance of the accidents that happen to them; ſo that the quality and ſeat of each may be ſufficiently known, to make a true prognoſtic upon their different kinds, without having ſtudied anatomy.

2. That the cauſe of the lameneſs in horſes, which is commonly looked for in the ſhoulders or haunches, is in the foot, proceeding from the compreſſion of the fleſhy ſole, by the coronary bones puſhing againſt it: this lameneſs often becomes incurable by the coaleſcing of theſe bones, for want of applying remedies as ſoon as perceived.

3. The rupture of the great tendon called the Tendo Achillis.

4. The fracture of the coronary bone into three pieces, and ſometimes more.

5. The fracture of the nut-bone in two, and ſometimes in three parts, but always fractured with the coronary bone.

6. The fracture of the foot bone only in two.

7. The manner of ſtopping the blood of the great arteries cut aſunder, without either ligature or cauſtic; with the judgment of the Royal Academy of Sciences, in conſequence of the reports of the committee, teſtifying the experiments made before them.

8. The method of ſhoeing horſes, in order to ſecure them upon a pavement in ſummer, or in winter, although quite ſmooth; and the advantages attending it; 1ſt. They are not ſo liable to caſt their ſhoes. 2. The fleſhy ſole is ſecured from ſeveral accidents: 3. To preſerve the legs and render their motions more eaſy.

THE

ANATOMICAL TABLE.

The diſſected parts of a horſe's foot, and their figures, croſſed by ſix horizontal, parallel right lines, the ſpace of which indicates, upon every part, the importance of the accidents that happen to them; ſo that the quality and ſeat of each may be ſufficiently known, to make a true prognoſtic upon their different kinds without having ſtudied anatomy.

EXPLANATION *of the* FIGURES *of the* FIRST PLATE.

THE firſt figure repreſents the bottom of a horſe's foot.

A. is the horny ſole.

B. The frog.

2. The *hoof* towards its lower edge, called by the author the wall of the foot.

Figure the ſecond ſhews the horny ſole A. raiſed from the fleſhy ſole C. round which is the enchannelled fleſh, 6. placed in the ſulcus of the inner ſurface of the hoof: 5. the horny part of which is ſoft and white.

Figure the third repreſents the under part of the fleſhy ſole C. raiſed from the foot bone [*] D. G the covering or *theca* of the *Tendo Achillis*. 2. The cartilage. 6. The edge of the fleſhy ſole confined in the furrow of the channelled horny ſubſtance.

The fourth figure ſhews a back view of the leg.

7. The ſkin laid open, in order to view the inner ſoft parts belonging to the articulations.

8. The aponeurotic membrane, formed of different laminæ, which ſeparate the muſcles and cutaneous tendons.

9. and 3. Are partly the covering of the flexor tendon of——

5. The coronary bone [†], which ſerves as a covering to the Tendo Achillis, 10.

11. The ligament of the canon-bone, the paſtern and the coronary bones;

16. The cut in the capſula of the tendon of the coronary bone.

[*] The foot-bone is Gibſon's *Coffin-bone.*

[†] The coronary bone is the little paſtern of Gibſon.

18. The canon-bone *.

6. The foot-bone.

Figure the fifth is the ſame leg and in the ſame view.

2. The foot bone.

1. The Tendo Achillis, diſſected to ſhew the coronary bone 6.

3. The nut-bone †.

4. The concave part of the foot-bone to which the tendon is fixed.

7. The ligament of the foot-bone with the nut-bone.

8. The ligament of the tendon with the nut-bone.

Figure the ſixth repreſents the *Tendo Achillis* raiſed and ſeparated from figure 5. To ſhew the lamina 8. which ſerves as a ligament to the nut-bone of the ſame figure.

Figure the ſeventh ſhews the enchannelled fleſh, 1. The wall or hoof being raiſed from it; 2. The rough border that ſurrounds the enchannelled fleſh above the hoof.

3. The cartilage of the foot.

4. The extenſor tendon of the foot.

Figure the eighth demonſtrates the bone of the foot Z. the enchanelled fleſh of which is rais'd with the cartilage.

5. The ligament of the coronary bone with that of the foot.

3 and 4. The extenſor tendon of the foot.

The ſecond plate, containing figures of the oſteology and fracture of the bones.

Figure the firſt repreſents a fore view of the leg.

3. the canon-bone cut acroſs at the upper end.

4. The paſtern bone.

5. The coronary bone.

6. The foot bone.

The ſecond figure is a back view of the ſame leg.

8. The canon bone.

4. The paſtern.

5. The coronary bone.

3. The nut-bone which cannot be ſeen in a fore view.

6. The foot, or coffin-bone.

The third figure is another back view of the ſame leg.

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* French authors call thoſe bones, *Canon bones* both before and behind, which Gibſon calls in the fore legs, the *Shank bones*, and in the hind legs the *Inſtep bones.*

† The nut-bone called by the French *Os de la noix* is a little oblong bone placed acroſs at the junction of the little and great paſterns behind, which is not taken notice of by Gibſon.

16. The place where the artery divides into two branches.
5. The diſtribution of theſe two branches round the foot.
4. The holes into which theſe two branches paſs, in the foot.
6. The foot bone.

The fourth figure is the coronary bone viewed anteriorly, with the marks of its fractures, 1, 2, 3.

The fifth figure is the ſame coronary bone in a back view with the appearance of the ſame fractures, 1, 2, 3.

The ſixth is the nut-bone fractured into three parts, 4, 5, 6.

The ſeventh ſhews the ſame bone fractured in two, 4. 4.

The eighth is a figure of the foot bone viewed on its upper ſurface fractured in two, with the mark of the fracture, 6, 7.

The ninth is a view of the under ſurface of the ſame bone, with the fracture marked 6. 7. this bone is very ſpongy.

OBSERVATIONS

UPON SUCH

ACCIDENTS

As often happen to horſes feet, which give them a ſudden lameneſs, the cauſe of which cannot be diſcovered.

OBSERVATION I.

A Lame horſe was committed to my care, but I could receive no manner of information concerning his diſorder; and after I had dreſſed him for eight and twenty days, without either diſcovering the cauſe, or the leaſt ſucceſs: they put him into the hands of another farrier, who alſo attended him fifteen days longer. The owner of the horſe ſeeing this man's endeavours as fruitleſs as mine, gave him up to me, and I cut off his leg in order for diſſection; and found the *Tendo Achillis* ruptured near its inſertion, and the coronary bone broke into three pieces, without any diſlocation; having as recent an appearance as if they had been fractured but a day; altho' the accident happened ſix weeks before. And not being able to find out how, nor by what particular effort this bone could be broken; nor whether it was begun by the foot, or paſtern bone; I ſhewed it to ſeveral ſkilful perſons, who after a long examination appeared as much at a ſtand about it as myſelf. Nor was there any ſudden effort of the horſe obſerved before it.

Observation II.

With reſpect to ſuch efforts, I myſelf ſaw a horſe, put to a coach, fracture the coronary bone at his firſt ſetting off.

Observation III.

I happened to paſs by a coach, when the coachman, ready to put off, whipped his horſe, who inſtantly made a ſpring, and became ſuddenly lame; having obſerved it, I felt his foot, and the rattling noiſe I was ſenſible of, by touching him, indicated the coronary bone to be fractured; and the diſſection farther proved the Tendo Achillis to have been ruptured near its inſertion, as may be ſeen by the figures.

Observation IV.

A horſe who was put to a coach, being at the ſame time very quiet, received a cut of a whip from the coachman, which made him tremble, whence he ſuddenly fell lame; the coachman ſaw it and looked at his foot. And though nothing ailed him to appearance, he put him into the ſtable. I was called and found the coronary-bone fractured, declaring him incurable; but this was doubted, becauſe they had not obſerved any effort made by the horſe before it; however they took care of, and dreſſed him for a month, but as he grew no better, they put him to death; I diſſected his foot to ſhew them I was not miſtaken; I demonſtrated that the coronary-bone was fractured into three pieces: but was ſurpriſed to find the nut-bone alſo broke in two, and the *Tendo Achillis* entire, becauſe I never ſaw fractures of this kind before, among the many diſſections I had made.

Observation V.

Having examined a horſe, whoſe ſhoulder was dreſſed, which was thought the ſeat of his diſorder; I aſſerted it was in the foot, cauſed by the compreſſion of the coronary bone; for, that being in motion, it raiſes and puſhes the nut-bone againſt the tendon, which puts the fleſhy ſole in a ſtate of compreſſion, as if between an anvil and hammer. It formed an inflammation there, and therefore they ought to have immediately drawn the ſole; but as they had loſt ſome time,

and

and ſeeing he did not mend, I ſaw him again, and found a ſmall ſwelling at the coronet, which I ſhewed, and they reſolved upon drawing the ſole. They accordingly drew it out, after having fired the tumor; but he was not cured. He remained eight months in pain when they killed him. I found the *Tendo Achillis* oſſified at its inſertion with the coffin-bone, and this with the nut and coronary-bones, round which the cartilage was alſo coaleſced, ſo that all theſe parts formed one entire body *, the pieces of which I have yet by me. Theſe examples make it apparent that the compreſſion of the fleſhy ſole, for want of a ſpeedy remedy, becomes incurable.

Observation VI.

Of a ſingular fracture which happened in 1743. I was called to ſee a horſe who became ſuddenly lame of his two hind feet, being put to a coach. It was thought he had ſtrained his reins; I examined him, and declared his diſorder was in his feet, and that it was incurable, for that he had fractures in them. I diſſected theſe two feet and found the two coronaries fractured, and the two tendons of Achilles ruptured: this horſe walked near a quarter of a league, with theſe two bones in that condition.

Observation VII.

Another horſe put to a coach, without any apparent violent motion, fractured the coronary-bone in twenty pieces; while the nut-bone, that of the foot, and the great tendon remained unhurt; this was the only caſe of this kind I ever ſaw.

Observation VIII.

Another horſe had been lame a conſiderable time; and it was not known whether it was in the foot or ſhoulder: I examined him, and found the coronary-bone fractured, and aſſured them his caſe was incurable; they doubted it, but were obliged to abandon him at the month's end; I diſſected his foot and accordingly found the coronary-bone fractured in four pieces, and the nut-bone in two, the *Tendo Achillis* being ſafe.

Observation IX.

A horſe was lame for four months; he was dreſſed at firſt above the leg, and afterwards in the foot, but his ſole was not drawn; I judged him incurable, as I ſuſpected an anchyloſis, and he was put to death. I diſſected the foot, and found the foot or coffin-bone fractured in two, in which fracture the anchyloſis began to be formed, as well as the oſſification between the coronary, nut and coffin-bones. The fracture croſſed diametrically one of the cavities of the articulation, and ended towards the middle of the toe or point of the foot-bone. So that this bone appeared to be divided obliquely into two unequal parts; It is not unlikely that the horſe had trod upon a ſtone which raiſed one ſide of his foot more than the other, and which, joined to the weight of his body, cauſed this oblique fracture; although the foot was in a perpendicular direction: this is the ſecond fracture of this ſort I have met with; and it is curable if ſpeedily taken in hand. I have already ſeveral feet, which are oſſified like this.

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* An Anchyloſis.

OBSERVATION X.

A horſe was lame for two months without their knowing his caſe; I pronounced the lameneſs to be in his foot, and ſhewed them a ſmall ſwelling at the coronet, they attended him, but the ſwelling increaſed, for two years, by neglecting to draw the ſole in the beginning. I diſſected this foot, and found the nut, coronary, and coffin-bones oſſified together; which was cauſed by the diſcharge of the oſſeous juice upon them; they were ſo coaleſced together, that it was difficult to diſtinguiſh the places of the articulation of theſe three bones.

OBSERVATION XI.

An anchyloſis after an inflammation. An effort or ſtrain which might not be violent enough to fracture the coronary or nut-bones, nor even rupture the flexor tendon, might go ſo far as to produce an inflammation of the fleſhy ſole; if the inflammation is communicated to the ligaments, tendons, and capſulæ of the joints. I pronounced it always incurable by the formation of an anchyloſis in the part if not inſtantly taken in hand. I have ſeen two kinds of this diſeaſe in feet diſſected by myſelf.

OBSERVATION XII.

Drawing the ſole prevents ſuch oſſifications as I have been mentioning, and relieves the fleſhy ſole from preſſure; which ſole is regarded as an expanſion of the muſcles and tendons of the foot; this operation enlarges the ſpace in the hoof, the fleſhy ſole being no longer preſſed, its inflammation ceaſes and the foot recovers its natural ſtate.

When a horſe's ſole is drawn, care muſt be taken to let the foot bleed in order to empty the blood-veſſels and lymphatics, to apply with the firſt dreſſings, turpentine and its ſpirit, or oil; and not to bind the ſplints too ſtraitly, that the inflamed parts may not be injured, the coronet muſt be bathed with oil of turpentine, and the hoof dreſſed up all round with emollients, in order to moiſten, extend and ſoften the parts.

Observation XIII.

The hoof of a horſe may be compared to a ſponge; when it is dry it contracts itſelf even to the inner parts; if it be moiſtened, it ſoftens and dilates; if he ſtands long in a ſtable without taking care to keep the hoofs moiſt, he often goes lame; becauſe they are ſuſceptible of contraction as well as dilatation. The compreſſion in the hoof happens by the coronary puſhing againſt the nut-bone, upon which it partly moves; which having the action of a lever, takes for its point of ſupport the upper and fore-part of the foot-bone compreſſed; the nut-bone which it raiſes, and which puſhes againſt the *Tendo Achillis*, which tendon preſſes the fleſhy ſole againſt the horny one; and all theſe combined compreſſions produce an inflammation upon the fleſhy ſole, which ſpreads over all the other parts.

Observation XIV.

I have happened to dreſs the ſhoulders of lame horſes, becauſe the owners inſiſted that the cauſe was in that part; although it really was in the feet, and proceeded from compreſſion; theſe horſes were cured without having any remedies applied to the feet, but it was by great chance, length of time, and reſt; which often happens.

I can however aſſert that I never ſaw nor heard of a horſe, put to hard labour, as drawing heavy carriages, or carrying heavy burdens, fracturing the coronary-bone.

Observation XV.

Strong compreſſions are diſtinguiſhed by puſhing the thumb upon the coronet, it makes the horſe feel as ſharp a pain as if there was a fracture; in this caſe no time muſt be loſt before the ſole is drawn.

When the compreſſion is not ſo violent, as that it cannot be thus known by the coronet, it muſt be examined in the foot, the horny ſole muſt be pared until it becomes flexible under the tool; which muſt be done as near the frog as can be; the tool muſt be preſſed, and if the horſe is ſenſible of it in that place, we may be aſſured that there is a compreſſion of the coronary-bone upon the nut-bone. The method of cure is to pare the ſole to the quick, to let him bleed at the point of the foot, and apply a pledget with oil of turpentine to the bleeding; alſo an emollient poultice in the foot and round the coronet. Above three fourths of theſe caſes are cured without drawing the ſole: but I prefer bleeding in the upper part of the foot, in expectation of the returning blood; whereby you will the better unload the part.

OBSERVATION XVI.

The moſt certain remedy is to draw the ſole immediately, I have cured horſes in fifteen days by this method, that were not able to put their feet to the ground.

Again, the length of time the compreſſion has continued, may be known by the adheſion of the horny to the fleſhy ſole, for the horſe bleeds but little after drawing it; becauſe of the interruption of the circulation of the fluids by the compreſſion.

OBSERVATION XVII.

A horſe, drawing a cart heavily loaden, preſſed his foot upon a piece of iron, which ſplit the foot or coffin-bone. I took off the ſhoe and drew the ſole immediately; and he was perfectly cured. This bone ſo ſplit by the iron ſhews that this part, fractured by the mere effort or action of the horſe, may unite, if preſently taken in hand, even though the fracture happens above by the coronary-bone.

The fracture of the foot-bone which has no other motion but thoſe of the fleſhy and horny ſoles upon which it is ſituated, happens from one of the two convex ſides of the lower part of the coronary-bone, the other ſide making an unequal preſſure: this fracture ought to unite, becauſe the motion of the foot-bone upon the fleſhy ſole is very imperceptible, being ſtrengthened by the horny ſole, encloſed all round by the enchannelled fleſh, and ſecured over all its ſurface, which is equally enchannelled by the inner horny ſurface of the hoof, which is ſoft and whitiſh.

From all I have ſaid above, it may be concluded, that 1. The nature of the union of the fibres of the ſuperior parts, the tenſion and elaſticity of which is very great in the foot, ought to render them ſuſceptible of all the unhappy conſequences of compreſſion.

2. That it is to no purpoſe to keep horſes who have any fractures, except in the foot-bone; the fracture of this is capable of uniting, becauſe of its having ſo little motion, and is ſecured as I have juſt ſaid.

I keep ſome preparations as teſtimonials of caſes which prove, that if a nail penetrates to the joint of the foot, where matter may be formed, and by its long continuance putrify, ſo as to erode the cartilages of the joint, by its corroſive quality, the caſe is incurable.

3. When a ſudden motion or effort of a horſe is not ſufficiently violent to fracture the articulations of the foot, the puſh of the coronary-bone upon the nut-bone, muſt occaſion a ſtrong compreſſion upon the fleſhy ſole againſt the horny ſole, which we look upon to be no more than an expanſion of the nervous tufts of the muſcles and tendons of the foot as we have ſaid before.

4. That in all caſes of ſtrong compreſſion the inflammation muſt oſſify the joints of the foot, by the ſtagnation of the fluids, eſpecially when not taken care of ſoon enough.

B. I have ſeen examples wherein, when the nut and coronary bones have been wounded by nails, or when matter has been long pent up, the cartilages of theſe bones have been eaten into by the ſharpneſs of it; theſe are incurable diſorders, even though all the other parts are ſound.

There can be no hopes of curing the fractures of the nut and coronary-bones, as we do the ruptured *Tendo Achillis*, for all their articulations are in continual motion; and if by chance they ſhould unite, the horſe would ſtill inevitably be lame, by the *callus* formed in the joint, as Mr. Morand ſays in his report given in to the academy.

B. I preſume the very ſtructure of the foot makes it liable to ſeveral accidents. The hoof wherein the articulations of the upper parts aſſemble, and which, beſides, has its own particular motion, has need of great ſtrength and ſolidity; becauſe all the weight of the body, bearing upon the feet, can admit neither the bones nor tendons to vary their condition.

OBSERVATION XVIII.

Having dreſſed a horſe whoſe ſole was drawn, from which they had cut away part of the frog for a ſtreet nail that had affected it; being almoſt cured, as he lay along, he had a cut of a whip given him; he ſtarted up but was lamed by the ſudden ſpring in riſing. I thought at firſt that it was occaſioned by the preſſure of the coronary-bone againſt the nut-bone, but about ten days after the accident, a humour appeared about the middle of the foot; I then thought the nut-bone might be fractured, but the humour penetrated deeper; I obſerved the nut-bone intire, but the tendon ruptured, and the lower part properly attached. In five or ſix days more this part of the tendon came off piece-meal from its adheſion, and laid the nut-bone bare. I uſed the *Fioraventi Balſam* * in my dreſſings for three months which ſucceeded; what gave me hopes, was my having ſeen ſome horſes, whoſe tendons were cut acroſs through ignorance, recover; I had a mind to know how the upper part of the tendon could reunite at its inſertion upon the foot-bone, for this horſe was cured. And an accident happened by which he died eleven months after, which gave me an opportunity of diſſecting his foot; when I found the tendon oſſified with the nut-bone, and this with that of the foot, ſo as that theſe three parts were united, and the coronary-bone had preſerved the freedom of its motion in the joint. The horſe was no longer lame, but in walking inclined a little upon the heel.

OBSERVRATION XIX.

A horſe, upon whom the extirpation of the frog for the thread, a ſpongy excreſcence ſo called, was performed, had the *Tendo Achillis* much injured; I could not well tell whether it happened from cutting out the thread, or from the acrimony of the topical applications; the tendon however was deſtroyed as that mentioned above, the nut-bone was laid bare, and the tendon putrified at its inſertion. After his cure was compleated, he died in five or ſix months. And I found the nut-bone covered, by a kind of ligament, all over that part which was connected with the upper part of the tendon: this new tendon was as a ligament, and adhered to the nut-bone, which was oſſified to it; but it was more than twice as thick as in its natural ſtate. It remains to know whether this excreſcence proceeds from the tendon, or from the covering of the cellular membrane or from other membranes; but it is time and obſervations which muſt lead us to the knowledge of this.

REFLECTIONS.

IN reflecting upon the various motions a horſe makes, and upon the ſtructure of his foot, we cannot be ſurpriſed to find this part liable to ſo many accidents. Experience ſhews us that for one horſe who is lamed in the haunch or ſhoulder, an hundred have it in the foot, and that the knowledge of this part merits all our attention: I am of opinion theſe accidents happen chiefly to draught horſes, and not to thoſe of the ſaddle; I alſo think that it is the different attitudes of a horſe's foot over-charged at the ſame time with the weight of his body, that cauſe the different fractures of the coronary and nut-bones; for when the foot has not a direct poſition, the joints are twiſted, as when a horſe treads upon the point or toe of the hoof, the upper and inner part of the coronary-bone, which is in an oblique poſition, preſſed in that ſtate by the burthen of his own body, is forced to yield on one ſide, and riſe on the other, its lower and back part, which now riſes, drives the nut bone againſt the *Tendo Achillis* which ſuſtains it, the tendon preſſes in its turn againſt the fleſhy ſole, which is alſo compreſſed againſt the horny ſole, which is its point of ſupport; the tendon, coronary, and nut-bones become fractured upwards and backwards by the paſtern, which alſo had an oblique poſition, and downwards and forwards by the foot or coffin bone, which here acts as a wedge.

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* A vulnerary balſam, like the Friars Balſam.

The nut-bone is ſometimes fractured by the lower and back part of the coronary-bone alone: but although theſe bones are fractured in the manner I have juſt mentioned, at the inſtant a horſe gives a ſpring, there happens no luxation of theſe bones, becauſe of the manner of their being tied and ſecured all round by the ligaments, the tendons, cartilages, and the conſtruction of the hoof which incloſes them and all that depend on them.

In all the horſes feet I diſſected, immediately after theſe accidents, I found the *Tendo Achillis* ruptured, and had a notion that the fracture of the coronary-bone in three pieces ought always to be followed by the rupture of the tendon, particulary after the foot is pared; or that there are froſt nails or raiſed heels to the ſhoes, ſo that the frog is thrown up from its point of ſupport; which will appear when we treat of ſhoeing.

We diſtinguiſh fractures of the coronary-bones in raiſing the foot by the lower part; the foot muſt be drawn forward, and preſſed upon the coronet with the thumb, and if there is a fracture, a ratling will be perceived; when the tendon is not ruptured, it ſuſtains the bones; and, as it is their point of ſupport, the noiſe is leſs ſenſible, but it is better diſtinguiſhed when the tendon is divided.

It is to be obſerved, as to the fracture of the foot-bone, that this bone is in a manner immoveable in its place, ſupported in its plane by the horny ſole, and in its circumference by the ſides of the hoof, which keep it univerſally firm every way.

I never ſaw this bone fractured but once, and believe it curable, and what made me of this opinion was, that I happened to attend a horſe who had the foot-bone ſplit in two, quite through, by treading on a piece of ſharp iron; and he was cured of it. A ſaddle-horſe has a different attitude and manner of treading from that of a draught-horſe; the former always has the articulated parts of his foot in a perpendicular direction, and in their proper ſituation for action; whereas the draught-horſe is accuſtomed to have theſe parts often in an oblique poſition; and convenient for the attitude neceſſary in drawing a carriage; and accordingly a ſtone or fault in a pavement, happening under one ſide of his foot, which is thereby inclined to the other, the preſſure of the coronary-bonecharged with the whole weight of the body will be very capable of cauſing this kind of fracture.

THE
METHOD
OF CURING
PRICKS and other ACCIDENTS
That happen to HORSES FEET.

PLATE I. *upon all the lines.*

FIGURE I.

IF a nail has only pierced the horny ſole, and but lightly touched the fleſhy ſole, there is nothing to do.

But if there is room to ſuſpect the bone of the foot D figure 3. is touched; a large opening muſt be made, in order to prevent drawing the ſole, by facilitating the exfoliation.

If the nail has penetrated to the inſertion of the tendon 10. figure 4. great attention muſt be paid to it, dreſſing it the oftner, that the tendon be not injured; if it paſſes into the concave part 4. of the foot-bone figure 5. an exfoliation will come on, without any bad conſequences, provided matter be not left any time to deſtroy the ligament 7 upon the line R figures 1. 2. 3. 4. If the nail has not paſſed to the tendon, the horſe will grow well without a neceſſity for drawing the ſole; but if the tendon is wounded the ſole muſt be carefully drawn, becauſe the ſynovia is diſcharged. If the nail has penetrated to the ligament 7 fig. 5. he muſt be dreſſed lightly every day rather twice than once, taking care not to confine the tent, nor let the matter remain in any time, leſt it might erode the cartilaginous parts of the nut-bone and deſtroy its ligaments. When the part is to be laid open, a channel'd director muſt be introduced to conduct the point of the biſtory, in order to make a perpendicular opening, and not a tranſverſe one, becauſe the tendon might be cut acroſs, which would not coaleſce again, and great miſchief might be produced.

Upon the line B figures 1. 2. 3. 4. the ſame manner of proceeding muſt be uſed, as is marked upon the line R. but if the nail is gone up to the nut-bone 3. figure 5. it is incurable, becauſe this little bone cannot exfoliate, and becauſe the cartilaginous part of it is deſtroyed as ſoon as injured.

Upon the line S figures 1. 2. 3. 4. the ſame muſt be obſerved as at the line R. but if it reaches to the ligament 8. what is mentioned for the line R. muſt be followed, becauſe there will be danger of corroding the lower cartilaginous part of the coronary-bone, which in this caſe would become incurable.

Upon the line T. there is danger only of the cartilage 2. figure 3. of which I ſhall make ſome mention; if the nail paſſes into the frog B. figure 1. ſo as not to reach the tendon, nothing comes of it, even though it penetrates through to the paſtern. I have made horſes walk in this caſe, without confining them to the ſtables; but if it has touched the tendon, we muſt proceed in the method obſerved before. If the nail has touched between the line A. and the line R. and that it has penetrated to 4 plate 3 figure 3. it may have pricked an artery; in which caſe a proper pledget muſt be applied in order to compreſs the part and ſtop the blood.

For all theſe operations the balſam of fioraventi or ſpirit of turpentine muſt be uſed, and the dreſſings prepared as we ſhall mention them for drawing the ſole; but care muſt be taken when it is to be drawn, that the horny ſole be not too ſtrong, and if it be ſo, to pare it well that it become more flexible; otherwiſe in bearing with the ſpatula upon the edge of the hoof, we ſhall run the riſque of forcing and ſeparating it from the enchannelled fleſh, which would produce a dangerous inflammation, of which I have ſeen ſome examples. You muſt obſerve not to raiſe the fleſhy ſole with the horny ſole, nor to disfigure it, as has been done, for it prolongs the cure; but every able practitioner knows how to avoid theſe kinds of dangers. When the cartilage muſt be cut away figure 7 and 8 plate I. if it be ſpoiled, part of the wall or hoof which covers it muſt alſo be taken off, as alſo the enchannelled fleſh repreſented at figure 7. and then the whole cartilage without reſerve; for if any part be left, although ſound, it ſoon becomes morbid, and notwithſtanding all our endeavours, we ſhould be obliged to come to a ſecond operation. The ligament which joins the bone of the foot to the coronary, and the capſula that contains the ſynovia of the joint muſt be carefully avoided, for touching theſe parts would render the diſorder incurable, as if the lower part of the coronary-bone was injured figure 1. Plate II.

In order to remedy and aſſiſt this operation the ſole muſt be drawn, if there be any matter under it, on the diſeaſed ſide; but if not, it may be let alone; for the firſt and ſecond dreſſings good firm doſſils muſt be made, ſome little ſome big; the ſmall ones for the bottom of the wound, the larger ones for the outer part gradually enlarged, which muſt be dipped in oil of turpentine; afterwards the doſſils muſt be armed with common-turpentine, and a good firm bandage put on to compreſs them, ſo as to prevent the fleſh from riſing above the hoof. As for the future dreſſings they need not be cloſely confined; in this caſe all ſoftening remedies are good, and the whole difficulty of this amputation lies in the cutting, and the management of the dreſſings.

I have obſerved that although the operations made upon the fore feet, be never ſo well performed, eſpecially if the hoof be ſtrong, and however well cured, the horſe will ſometimes continue lame; which never is the caſe with the hind feet; this is a fact which perhaps we may in ſome meaſure account for.

If what is marked above be not punctually followed, and the cartilage ſhould be taken off piece-meal, either by cauſtics, the actual cautery, or cutting, we riſque keeping the horſe a long time upon his litter; which retains the matter, ſpoils the capſula and ligament, and often deſtroys the animal.

The diſſection of the feet of two horſes has taught me an exception to this extirpation of the cartilage abovementioned: It happens ſometimes by an extraordinary conformation, that the horſe has little or no cartilage upon the apophyſis of the foot-bone, and that it is a true elongation of the ſame bone, which by its conſiſtence or hardneſs very well reſembles the form at the coronet of the foot. He that is acquainted with his ſubject will in this caſe diſtinguiſh the want of the cartilage, in preſſing the coronet, by the moveable reſiſtance of the bone; in ſuch circumſtances it is to be ſuppoſed that the quarter of the hoof muſt not be cut away, but a ſimple opening only muſt be made on the upper part of the apophyſis in order to wait the exfoliation of the carious bone. If it happens that this preternatural bone is edged by a thin cartilage, the ſaid part or quarter muſt no more be taken off than in the caſe above, for the corroded part will ſeparate by being treated in the above manner, and will come out at the opening made above.

A
MEMOIR
PRESENTED TO THE
ROYAL ACCADEMY OF SCIENCES
November 18, 1750.

Upon a moſt ſpeedy and infallible remedy to ſtop blood in large divided arteries without a ligature.

In order to ſtop the blood in accidental hæmorrhages of the ſmall veſſels, I had a notion to try what effect, the duſt of a certain wild muſhroom, commonly called in France Veſſe-de-loup *, and botanically *Lycoperdon*, could have upon great divided arteries; in the caſe of accidents in bleeding, and in performing amputations of limbs; I propoſed therefore to make my experiments on horſes.

Having choſen proper ſubjects, I laid the temporal artery bare in one, and divided it tranſverſely half way; the blood ſtarted out with great impetuoſity; I applied ſome of this duſt of the puff-ball, which I confined to the part, by only the palm of my hand, for about twelve or fifteen minutes; and the blood ſtopped.

* In England puff-balls.

I pricked, in the ſame manner, the artery in a horſe's leg; I dreſſed it with the ſame duſt, and the blood ſtopped in like manner.

I cut off the fore-leg of another horſe at its upper part, near the thorax, and applied the powder or duſt to the ſtump, without any other dreſſing than a bladder to keep it on, and the blood ſtopped; notwithſtanding the ſtruggles of the horſe to relieve himſelf, for he was thrown, in order to make the operation.

I afterwards cut off the tail of the ſame horſe at the place of its firſt joint; and the blood of the four arteries ſtopped like the other caſes by the ſame treatment.

I cauſed this horſe to be knocked on the head on the fourth day after, and diſſected the divided arteries; when I found that a membranous incloſure was formed, which was half tranſparent and exactly ſtopped their orifices, the center of each of which had a little grume of blood like a nipple.

It muſt be obſerved here that as I examined the ſtump of this horſe while he was yet alive, I ſaw with great pleaſure, the blood force againſt the ſaid incloſing membrane, which being upon the level with the fleſh, made it eaſy for me to obſerve very diſtinctly the extremity of the artery by its pulſation.

Having ſeparated the fleſh from the artery, I ſlit it up longitudinally, and found that the little grume of clear blood was of a firm conſiſtence, of a lively red, in form of a cone or ſugar-loaf, the baſis of which adhered to the little incloſing membrane which ſhut up the artery without; the point of which floated in the cavity of the veſſel; and I further found the coats grown thicker at their extremities.

At length, in order to try whether the ſuppuration of the wound would not open the orifices of the arteries again, which were juſt ſtopped up by the remedy, I let the firſt horſe live, which was the more vigorous of the two, until a perfect ſuppuration was eſtabliſhed, which proved that it did not, in the leaſt reſpect, hinder the cicatriſing of the arteries.

A NEW METHOD OF SHOEING BOTH COACH AND SADDLE-HORSES.

In order to render them more ſecure upon their feet at all times, upon even the ſmootheſt pavements.

EVERY country has its different method of ſhoeing horſes; but as I do not intend to make a critical examination into either the errors or perfections of their methods, I ſhall only give a ſhort account of the practice of ſeveral countries, that the reader himſelf may judge how nearly the method of ſhoeing in our time comes to perfection, or how far from it.

In Pruſſia they only ſhoe before and not behind.

In Germany they ſhoe both before and behind; and commonly put three cramps upon each ſhoe.

In France they cramp them only behind.

In England the ſhoes have no cramps either before or behind, and the ſhoes are thin, broad, and have very ſtrong heels in order to hinder the frog's bearing upon the ground.

In Spain the heels of the ſhoes are thin, and partly confined down upon the heels of the horſe.

In Turky the horſe's heels and ſoles are covered with a plate which ſerves them inſtead of ſhoes, wherein they contrive an opening to let part of the frog come through. All theſe ſeveral kinds are repreſented in Plate III.

As to the manner of paring the foot, it only differs according to the greater or leſs quantity of the ſoles being taken off.

It muſt, however, be obſerved, with reſpect to the cramps, that our anceſtors put them on the fore-feet; though there is no treatiſe that makes any mention of it; but over the door of the church of St. Severin there is a number of ſhoes fixed to the wall with two cramps on each which were certainly the ſhoes before the laſt age. Some of them had been worn and others not, but it is plain they were thoſe in uſe at that time.

For ſeveral years paſt the method of cramps have been left off, inſtead of which ſtrong heels have been brought into uſe; but the more able farriers perceiving the abuſe of ſuch, now keep the heels equal to the reſt of the ſhoe.

Every nation thought themſelves right, and believe ſo ſtill; nor will any of them change the manner of ſhoeing. The foreigners who are lovers of horſes, and who come into this kingdom, are a ſtrong proof of this; for almoſt all of them bring with them a farrier of their own country; being ſtrongly of opinion that their methods are preferable to ours.

But we are pretty even with them in our opinions of them, for we generally uſe the ſame precaution when we travel into their countries.

It muſt not be ſuppoſed that the difference of the ground, cauſes any manner of difference in the methods of ſhoeing, which I have ſometimes heard mentioned as a cauſe; for we daily ſee here horſes ſhod in the Engliſh, German, and Spaniſh manner, and yet go upon our ground neither better nor worſe than thoſe ſhod in the French method; but only that this practice is ſcarce better in one country than another, and that in all places it is rather a matter of fancy and cuſtom than of conſideration and reaſon.

It appears to me that the cuſtom of ſhoeing horſes was a good one, and even neceſſary upon a pavement, but it is upon their form and the manner of ſetting them on, that not only the preſervation of the foot, but alſo the ſafety of their legs, and the eaſe of their motions depend.

And in effect, the more eaſy our ſhoes ſet upon us, the more active we are; ſo a large, long, thick ſhoe ought to have the ſame effect upon horſes, that wooden ſhoes have upon us, that is, make them heavy, unweildy, and hobling.

Let us now obſerve the going, as well as the external and internal ſtructure of a horſe's foot.

The horſe who draws, preſſes firſt upon the toe, then ſucceſſively upon the ſides, to eaſe the toe; and then the horſe's heel yields upon the heel of the ſhoe, from which it immediately riſes again.

The ſaddle or pack-horſe places the toe but lightly; which is the only difference in their going; ſo that in both caſes, the point of ſupport is fixed neither upon the heel nor toe, but between both; which it is eaſy to demonſtrate anatomically, figure the firſt, plate II.

The canon-bone 3. preſſes upon the paſtern 4. this upon the coronary 5. the coronary upon the coffin or foot-bone 6. and upon the nut-bone 3. fig. 2.

By this diſpoſition of the bones, we ſhould obſerve two eſſential things, which lay open the faults in the preſent method of ſhoeing, and point out the means of being able to remedy them for the future: one is that the effort of the weight of a horſe does not bear either upon the toe or the heel, but on the middle between both; the other ſhews that the greater the diſtance of the ſole from the ground, or from whatſoever point of ſupport, the more the puſhing of the coronary-bone upon the nut-bone, will fatigue the nerve or tendon upon which it reſts, by the inordinate diſtenſion it undergoes at every ſtep the horſe takes *.

We find therefore that in our preſent method, a long ſhoe is not only perfectly uſeleſs, but it is even very prejudicial; in the firſt place it will be leſs ſolid;—ſecondly, the horſe's heels coming to ſink upon thoſe of the ſhoes, the longer the lever, the greater will be the drag upon the clinches of the nails at the toe; and we often ſee horſes, having long ſhoes, ſtrike them off in walking upon the beſt ground.

They often alſo loſe their ſhoes in ſtiff or tough clay, for they are apt to ſtick the faſter for being ſo long.

Again when the ſhoe-heel happens between two pavement ſtones, the ſhoe comes off.

The ſame thing very often happens when they paſs into the doors of coach houſes, which have commonly bars of iron along the threſhold.

An old colonel of horſe told me that horſes very frequently loſe their ſhoes in paſſing over the draw-bridges of fortified towns,

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* See the anatomical plates, which ſhew the ſtructure of a horſe's foot.

towns, becauſe they are ſtrengthened with croſs parallel iron-bars. He ſeemed convinced of the convenience of the new method of ſhoeing I propoſe.

Horſes frequently too knock off their ſhoes by hitting the toe of the hind-foot upon the heel of the fore-ſhoe when they trot, eſpecially when they are too apt to over-reach; and alſo loſe them by happening to put one foot upon another, while in the ſtable, from the length of the ſhoe.

The longer a ſhoe is, and the more it covers the ſole, the more liable the horſe will be to fall, trip, and hobble in his walk; particularly if he goes upon a pavement, becauſe the ſurface being formed of round parts, and the ſhoe having a large uniform hard face, he can ſcarce have above two or three points of ſupport.

The Engliſh who practiſe this kind of ſhoeing take care therefore not to bring their horſes upon a flat pavement without an abſolute neceſſity. The length of the ſhoe cauſes yet another ill accident to ſome horſes, which they feel all their lives; and it is to thoſe eſpecially that lie down as a cow uſually does; for in this poſture the fore-legs are ſo bent under them backward, as that the heels of the ſhoes wound their elbows, and cauſe a kind of abſceſs in the part.

It is thought that ſtrong ſhoe-heels are an eaſe to the weak heels and fetlocks of horſes, as if the body of the ſhoe was flexible enough to yield to the horſes's heel, and under this notion, they raiſe the ſhoe-heel, and leave a vacant ſpace between that and the horſe's heel.

Neverthelеſs the direct contrary happens.

1. It is the hoof that by its flexibility yields to the ſhoe-heel, which is quite inflexible.

2. The thicker the ſhoe-heel is, and the more ſubject that of the horſe is to meet it.

3. Inſtead of being eaſed, the horſe's heel becomes more compreſſed, becauſe it has always the ſame point of ſupport.

Let us but remember what I have ſaid above concerning the horny ſole; that it is from the fleſhy ſole it receives its nouriſhment; that its connection and juicy parts conſiſt in its thickneſs; and that it hardens, and receives leſs nouriſhment in proportion as it is thinned. We even ſee horſes grow lame by the habit of paring the ſole.

The air, when it is in this thin ſtate, penetrates and dries it to ſuch a degree, that if when a horſe ſtands dry, they neglect moiſtening his feet, they contract, and compreſs the fleſhy ſole, ſo as to lame the animal.

But let us go on: what dangers does not a horſe run, when his ſole is almoſt gone by being pared too cloſe? if he ſhould happen to tread upon ſtumps, pieces of bottles, or nails, they will eaſily penetrate to the fleſhy ſole, lame the horſe for a conſiderable time, and ſometimes for his life.

Suppoſe a horſe loſes a ſhoe, which often happens, when his foot's but newly pared; he cannot go an hundred paces before he grows lame; becauſe, as in this ſtate the ſole is hollowed away, the horſe is ſuſtained only upon the walls of the hoof, which having no aſſiſtance of ſupport from the horny ſole, is immediately worn and battered by the weight of the horſe's body; and the ſooner he treads upon any hard ſubſtance, the ſooner he grows quite lame.

But this cannot happen to a horſe, whoſe ſole is left intire in its full ſtrength; for when the ſhoe happens to fall off, the ſole and frog bear upon the ground, eaſe the walls of the hoof of part of the weight of the body, and the horſe thus unſhod, will purſue his journey, and come in ſafe and ſound.

It is moſt certain that all horſes, except ſuch as have their feet overgrown, or ſuch as may have a particular occaſion of being ſhod to preſerve the ſole, may, at any rate, go without ſhoes; and we have examples among ourſelves, (without mentioning the cuſtoms of Arabia, or Tartary) of horſes who are at daily work in the country, without the leaſt need of being ever ſhod. But as we employ all our care and addreſs to hollow the foot by paring it even to the quick; and to form an exact fine frog, in ſhort ſuch an one as, we ſay in France, is neatly put out of hand, it is abſolutely neceſſary to ſet ſhoes on them.

I therefore warn all lovers of horſemanſhip to ſecure their horſes, as much as may be, from the perfection of ſuch work. Perhaps it may be aſked what becomes of the horny ſole if it be not pared? they may be afraid of its becoming too large by its growing; not at all, for in proportion as it grows, it dries, ſcales, and falls off in flakes.

Again, if the horny ſole be left entire, there would be no fear of thoſe inflammations, ariſing from the dangerous compreſſions mentioned in this treatiſe. For by its connection, thickneſs, and flexibility, as well as its contexture, it would ſeem to be wholly deſtined, by nature, to ſerve as a cuſhion to the fleſhy ſole and tendon which reſt upon it; in order to break the violent ſhocks of a pavement, ſtone, or any kind of ſtump, &c.

There is a fact which we muſt alſo be convinced of, and that is, that a horſe very ſeldom goes eaſy, or eſcapes being ſoon jaded, if the frog does not bear upon the ground; and as it is the only point of ſupport to the tendon; if you keep it at any diſtance from the ground by paring it away, an inordinate diſtenſion will happen to the tendon, cauſed by the preſſure of the coronary bone upon the nut-bone (as we have ſaid already) which diſtenſion being repeated at every ſtep he goes, tires it, and cauſes an inflammation, whence proceed relaxation, defluxions and tendinous ſwellings, eſpecially after long journies or hard riding. Theſe accidents proceed leſs from the length of the journey which is the common notion than from the bad cuſtom of paring the ſole.

The common methods of ſhoeing have another general inconvenience upon journies; which is that ſand and gravel get in, and are ground between the ſole and ſhoe, and again, between the horſe's heels and thoſe of the ſhoe; and not coming out again readily, they cauſe compreſſions, inflammations, and at length a collection of matter which putrifies and ruins the cartilage, forming in this latter caſe, callous horny excreſcences, and in the former bruiſes and compreſſions of the ſole.

Theſe laſt accidents are alſo very often the effects of a ſtone's being wedg'd in between the ſhoe heels; and although this is ſoon perceived becauſe the horſe ſuddenly goes lame, yet in endeavouring to knock it out, you run the chance of either hurting and laming the horſe, or ſtriking off the ſhoe.

Let this circumſtance be well attended to, that the more a horſe's foot is pared, the more he is expoſed to the danger of meeting ſuch accidents: It is in the firſt place, depriving him of the defence provided by nature againſt hard ſharp bodies, which he may chance to tread upon; and in the ſecond place of a more important advantage both for his own, as well as his rider's ſake, which is, that in not paring away the ſole, nor ſetting on any more ſhoe than is neceſſary to preſerve the horny ſole, he will no more be ſubject to ſlip, neither upon the winters icy pavement, nor upon the dry ſmooth one of the ſummer ſeaſon, which I ſhall now proceed to demonſtrate.

1. In making a horſe walk upon the frog and partly upon the heel, the former being ſtrongly rubbed and puſhed againſt the ground or pavement, as it were, impreſſes itſelf, by the

weight of the horſe's body into the inequalities and interſtices, it happens to meet in its way.

2. By its flexibility it eaſily receives the impreſſions of ſuch inequalities, ſo as that the foot reſting upon a great many more parts which mutually eaſe it, by multiplying the points of ſupport, gives the animal a ſtronger adherence and more ſecurity upon the plane he goes upon. It may even be aſſerted, that the frog acquires a kind of ſenſation, by its correſpondence with the fleſhy ſole, and of this with the nerve; which though I will not compare it with what we feel in going barefoot; yet this ſenſation is fully ſufficient to give him proper warning of the counterpoiſe he ought to put his body into, for maintaining his equilibrium to keep himſelf from ſtumbling and falling.

The end and deſign of ſhoeing horſes could not have been aimed at upon any other account, by whomſoever firſt put it in practice, but as a preſervative and defence for the hoof as well as the ſole; but he could not think at the ſame time that it was neceſſary to pare away what he wanted to preſerve by the uſe of the ſhoes, I will not even ſay to that exceſs that we uſe in paring them, but not at all; becauſe that would be to act contrary to his firſt principle, and deſtroy his own work.

This precaution could never be recommended but in caſes where the horny ſole is uneven, inſomuch that the ſhoe could not bear equally upon it; which would take off from its neceſſary firmneſs; in ſuch a caſe it may be reaſonable, otherwiſe it would be very abſurd.

I have often ſpoke to ſuch lovers of horſemanſhip as take great care to have their horſes feet well pared; but none of them could give me any demonſtration either of the neceſſity or propriety of it. But at length convinced by my reaſons againſt it, I never could have any ſatisfaction from them, but that it was an eſtabliſhed cuſtom, and that it muſt be allowed to be by far the moſt genteel method.

I will offer but one word more upon this pernicious practice, which is, that the greater part of the farriers, in order to pare their horſes the neater, puſh the buttreſs even to the very blood, and then in order to ſtop it, have recourſe to a red hot iron.

When this operation is finiſhed he returns lame to the ſtable: the owner aſks the reaſon of it, but cannot be informed, becauſe both farrier and groom are either equally ignorant, or rather equally diſcreet upon this article.

I will venture to ſay as a fact, that if a horſe loſes ſhoes ten times a day, a farrier will as often pare his foot, ſo exceſſively ly obſtinate is the cuſtom, and ſo poſitively thought neceſſary by the generality of the farriers.

I do not take upon me to inveigh againſt able and ſkilful farriers, I have reſpect for theſe, and do them all the juſtice imaginable; I only ſtrike at that ignorance alone, which has reduced a method of ſhoeing, which is in itſelf ſimple, eaſy and uſeful, in its principle; to a work which is pernicious in its uſe, and meerly a mark of dexterity and neatneſs in its execution.

From what has hitherto been ſaid, it is plain that our kind of ſhoeing, and the manner of our application of it, far from being ſerviceable to horſes, ruins, fatigues, and renders them unweildy and hobling; expoſes them to ſtreet nails, makes them take up their limbs aukwardly, ſubjects them to compreſſions of the ſole, callous excreſcences, tender-footedneſs, and obſtructions and ſwellings of the tendon. But by a new manner of ſhoeing, which will make them more alert and agreeable in their going, we ſhall be able to prevent the crowd of accidents mentioned; and it is from its ſimplicity, and the great eaſe of performing it, that all its advantages ariſe.

I cannot but wonder others have never thought of it before, and, I have, indeed, ſome difficulty to perſuade myſelf, that I am the inventor; and I am more ready to believe, that it is no more than copying that which was practiſed by the firſt artiſt, who thought of ſetting ſhoes on horſes.

If I am right in my ſuſpicion, its having been forgotten, proves nothing againſt its perfection; becauſe neither a good nor bad method has any more right the one than the other, to fix our inclination from varying. We grow weary of every thing; and one, in order to improve upon the other, has invented ſhoes of different forms, lengths, and thickneſſes, to which he has been ſure to attribute many uſeful properties. The world, more credulous than well inſtructed, are eaſily convinced, and from hence ſprung the uſe of ſome long ſhoes, others thick, others with cramps, at length others with thick ſtrong heels, and in fine, others with thin ones. It is not unlikely that if the poor animals themſelves were able to give their opinions, nothing of all this would be put in execution; they would be kept to their antient method of being ſhod, which being invented to preſerve the hoof, had certainly none of the inconveniencies that attend our preſent method.

In order to give a ſtriking example of this, we need only to obſerve a draught-horſe, when he draws a loaded cart, at a time when the pavement happens to become ſlippery; we ſhall ſee the pain and torment the poor animal ſuffers, his feet having no purchaſe, he attempts in vain to claw the pavement; every ſtep is a ſlip, for which he is often whipt without deſerving it; the back, breaſt, ſhoulders, legs, and all are ſtrained, all upon the rack; to which may be added, the perpetual fear of the whip, at every falſe ſtep he makes upon a pavement, which it is impoſſible to draw a load upon; under theſe circumſtances the horſe ſuffers more in one league, than if he had drawn ten leagues upon the road; the foundering, inflamed lungs, fevers, and every other accident of a ſtrained horſe are the conſequences, which are often attributed to other cauſes: but what is ſtill more dreadful, that the very worſt jades do not ſuffer ſo much as the beſt horſes, who put all their ſtrength forward, and yet are not the more ſpared for their willingneſs.

I ſhould not omit mentioning here, that one of the principal reaſons that determined me to ſeek a means of reforming the old manner of ſhoeing, was the difficulty that horſes have to keep their feet upon the pavement of Paris in a very dry ſeaſon; the more elegant the pavement of this capital is, which is wonderfully kept in repair, and the more advantageous to the citizens, the more prejudicial it is to the horſes. And the oftener the pavement is ſwept the more eaſily it grows ſlippery, and the more theſe animals are expoſed to danger. But above all we muſt without controul yield to what is convenient to men, and accommodate the arts to them, which made me think of this new method, I proceed to propoſe.

THE

MANNER *of* SHOEING.

THE ſole nor frog muſt never be pared, for the reaſons given before; we ought to be content with only taking down the edge of the hoof, as uſual, if it be thought too long; and then to ſet on a ſhoe in form of a half-moon *;

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* See the plate of the ſhoes.

thinning the heels, and making them a little longer ſo ſuch horſes as have weak hoofs; for when the feet are good they muſt only reach the middle of the hoof.

Eight ſmall nails made in the old way, that is, having very ſmall heads, are incruſted in the holes which are made, as the head is, in an oblong form; the figures both of the ſhoe and nail are to be ſeen in plate III.

This is the whole of the myſtery; I own this method does not ſeem to be in taſte; it is even a general reproach which they who make the trial for the firſt time offer me. But the greater part of thoſe who have tried this way, continue it, they find it ſo advantageous.

As to the reſt, if the reader does not find my reaſons ſufficient to convince him of the imperfection of the common method of ſhoeing, and of the advantage of the new way, I refer him to making the experiment; aſſuring him he is very much miſtaken, if he takes all I have ſaid, for a ſimple project, which would have no other merit than to have been formed from a meer rational theory. I aſſert to him that my notions have more ſolidity, and that in praiſing my new method of ſhoeing, I declare nothing but a fact a long time ago put in execution, and confirmed in practice.

The marquis de L. O *** colonel of horſe, and a lover of horſes, to whom I mentioned this new way of ſhoeing in October 1753, knowing the ſtructure of a horſe's foot, told me he thought it an uſeful and good way, and that he had a mind to have his horſes ſhod ſo; in ſhort he had it done, and tried it upon ſmooth pavements as well as upon ice; and although the roads were almoſt impaſſable this year 1754, his horſes never ſtumbled; and he recommended to me to go on with the ſame method.

I have ſhod in this manner for a great number of houſes in Paris; the firſt eſſay was made upon my own horſe, who draws my carriage to this day; he uſed to ſlip frightfully in going, though he was ſhod with cramps all round. But as ſoon as I had ſhod him in my new way, he became as ſure footed, as if he always walked upon good ground. I even proved in the laſt froſt, of laſt winter, that the ſame horſe, being ſhod in this manner, and only two froſt nails at the toe went firm and ſure even upon the ice.

1. I have obſerved before that all kinds of ſhoeing went well upon every ſort of ground; it is neceſſary however, to mention a word or two more about it.

In the German ſhoeing, the faſhion is to have two cramps to each ſhoe ; and is only fit for going upon the ice ; upon all other grounds it is hurtful to the legs, which are raiſed up, as if upon ſtilts.

2. The Spaniſh method hurts the horſes heels by the length of the ſhoe they ſet on, and with which they confine the heels upon the two quarters of the horſe's heel, which joins the coronet, in ſuch a manner that the foot becomes tormented and preſſed ſo as not to be capable of ſpreading, which makes almoſt all the Spaniſh horſes grow narrow heeled.

3. The Engliſh manner of ſhoeing is to keep the ſhoe-heels large and high in order to ſave the frog ; by this means they deprive them of the liberty of going with eaſe upon a pavement ; becauſe the ſhoe does not bear upon the level, and produces an effect like that of a pivot, upon the middle of the ſhoe-heels and the vault or hollow.

4. The Turkiſh horſes have alſo a great deal to do to keep themſelves ſafe upon a pavement, becauſe the ſhoe covers all the foot.

5. The French method of ſhoeing has the fault I obſerved before, of making their ſhoes too long ; of paring the feet and ſetting on one cramp on each ſhoe behind, which makes them go ſideling ; it would be better that they had two cramps to each ſhoe, but they make but one for fear the horſe ſhould go lame ; I allow that cramps are uſeful, eſpecially in deſcents, and in backing, but this cramp in a few days is worn, it ſlips upon a pavement, and has no effect but juſt when it is new ; again, does not the pavement alſo wear, while the ſtones grow convex in the middle, and make it ſlip from one to another, having no hold nor purchaſe between both ?

It is therefore very eſſential to leave off the cramps and to ſhoe the horſe in ſuch a manner that the frog may bear upon the ground, in order to enable him to ſtop ſhort, and make him more ſure-footed than with cramps : the frog will ſerve horſes to go upon the ſmooth pavement, as felts enable men to go upon the ice.

It muſt be owned that the French method of ſhoeing is the beſt and moſt ſolid of all for flat-feet.

As to thoſe horſes who have tumors within the feet, and fiſſures without, or weak quarters, they muſt be ſhod in the ſemilunar manner ; that is, ſo as that the outer-heel of the ſhoe may be ſomething longer, the inner very ſhort, in order to prevent the weights bearing upon the affected or painful part ; there are ſeveral expedients which produce the ſame effect; we may even think of many others, for it is the buſineſs of the artiſt; but to this time I know of none better, more ready, nor more certain, than the half moon ſhoe.

I wiſh for the benefit of ſociety that my atteſtation and experience were convincing enough to cauſe a reformation in a pernicious practice, which is ſubject to ſuch great inconveniencies; it would be the moſt agreeable recompence I could deſire.

This is what I had to ſay upon this new method of ſhoeing; there are already ſome of my fraternity who practiſe it; and many gentlemen of knowledge approve of it, and all I have done myſelf in it for ſix months, confirms to me more and more that it is a good method; yet I every day bear many contradictions from all ranks of people; ſome condemn it from prejudice, others thro' ignorance, and others thro' malice. Some farriers, and ſeveral coachmen and grooms are againſt this method; I therefore think it my duty, to anſwer in a few words, all the objections which have come to my knowledge about it.

OBJECTION I.

They ſay that this kind of ſhoeing will cauſe ſtrains, bruiſes, and other ailments in the heel.

ANSWER. I have already demonſtrated that the ſhoe-heels never yield as was thought; that the weight of the horſe forces the hoof to come upon the ſhoe-heel; by which the horſe's heel is bruiſed, as if in a preſs; and conſequently having the ſhoe-heels ſhort, he will be leſs ſubject to theſe diſorders by this ſhort-ſhoeing, becauſe the horſe's heel will but lightly touch the pavements, bearing the weight of the body intirely upon the middle of the foot, and upon the frog.

OBJECTION II.

Some pretend the horſe's-heel wears away.

ANSWER. To prove without reply, that this is falſe, that the heel can never be worn to the quick, and that its ſubſtance is of ſuch a nature as to grow more than it wears; it is that we are obliged to take it down every time we ſet on a ſhoe: but it is only in ſuch horſes as have the heels ſtrong.

OBJECTION III.

It is ſaid that I never open the heel, and that that is the cauſe of diſorders.

ANSWER. There are three ſorts of diſorders, the firſt comes from a ſtrain; to which I have anſwered, the ſecond from not opening the heel well ; but when ever I ſee them diſpoſed that way, I pare them, leaving the frog in its full ſtrength ; and the third ſort proceeds from the natural ſtructure of the foot ; and in this caſe whether the foot be pared or not, they will equally come on.

OBJECTION IV.

They ſay that the frog ought to be fatigued, becauſe the horſe goes upon it.

ANSWER. I could rigorouſly appeal for this to experience: no horſe ſhod in this new method has to this day ſhewed the leaſt ſign of the fatigue of the frog, or of its ſenſibility ; and I even do not believe that any one can ſay he ever ſaw horſes lamed, having old ſhoes on, for having travelled upon the frog ; and it will be ſeen that it is ſcarce poſſible, when we reflect upon the whole particular ſtructure of this part as I have given it in this work. It is a ſoft, ſpongy, flexible ſubſtance, which by its natural elaſticity yields to the weight of the body the inſtant the horſe preſſes his foot againſt the pavement, and immediately recovers again.

There is, however, a caſe wherein a horſe may become lame, by going upon the frog ; but which never was objected to me ; which is when it is hard and dry. The obſervation and anatomy of the foot have ſhewed me that it may cauſe lameneſs, becauſe the horſe in bearing upon the ground forces this hard part againſt the expanſion of the tendon which is attached to the foot-bone, and the horſe may become lame from the great ſenſibility of this part : but if I take off the little end of the frog with the buttreſs, he will not to be lame.

OBJECTION V.

It is ſaid the frog will be more ſubject to have ſpongy excreſcences.

ANSWER. That happens only to ſuch horſes as are full of humours ; and if there appears any diſpoſition towards it, the frog may be pared, and the horſe will go upon his heels, if they be ſtrong, as ſafely, upon a ſmooth pavement.

OBJECTION VI.

They ſay the nerve is wearied, that is, that the Tendo Achillis is ſtretched or dragged ; and ſuffers by this ſhort ſhoeing, becauſe the frog bears upon the ground.

ANSWER. It is juſt the very contrary.

Let us obſerve the effects of the weight of the body upon the Tendo Achillis in the following circumſtances.

If a horſe be ſhod with cramps, then there is a great diſtance between the frog and the pavement: the weight of the body bears upon the cramps; the frog which is now free in the air yields downwards, the tendon is ſtretched, and if the horſe makes a ſudden violent motion, the rupture of the tendon is almoſt inevitable: becauſe the frog cannot reach the ground to eaſe the tendon, to which it ought to be the point of ſuppport; if the tendon is not ruptured, yet the horſe will be lame a long time after, becauſe of the great diſtenſion of the fibres which were ſo much upon the ſtretch as to be near breaking.

If we ſet on ſhoes with only ſtrong heels, the frog is not ſo high from the ground; the weight of the body may indeed force the frog to touch the middle of a paved ſtone, and thereby prevent the great diſtenſion of the tendon; but as the thickneſs of theſe heels hinders the ſubſtance of the frog to bear upon the ground, to yield and reſtore itſelf as much as it is capable of by its natural elaſticity, the tendon muſt ſnap, by any violent and ſudden ſpring, every other circumſtance being equal.

But if a horſe is ſhod without ſhoe-heels, the frog which bears all the horſe's weight gives way at every ſtep, and by its elaſticity is reſtored to its natural ſtate; the tendon is never dragged or ſtrained; its fibres will not be ſuſceptible of any violent diſtenſion, in caſe of any ſudden violent motion.

I dare affirm before hand that a rupture of the tendon will never happen upon the middle of a paved ſtone; and if it ever ſhould, it could only be ruptured in the interſtice between two of theſe paved ſtones. From what I have ſaid, two things plainly appear: that all the different degrees of violence that one can imagine from its total rupture, to the moſt ſlight diſtraction of its fibres that can lame a horſe, may happen to the tendon; and that it is upon the frog alone that all theſe degrees depend, as it is more particularly laid down in the hiſtory of the fracture of the coronary-bone, and in the anatomy of a horſe's foot.

OBJECTION VII.

It is ſaid, the horſe will be more ſubject to be injured by ſtreet nails, and to other accidents which proceed from pricking the fleſhy ſole.

Answer. As in this method the foot is not pared, the horny ſole will always have its full natural ſtrength; and conſequently will be leſs liable to be penetrated, than when it is made extremely thin.

Objection VIII.

They ſay that the horſe is not ſhod to be eaſy, that he goes in pain, and muſt be lame.

Answer. If the horſe goes uneaſy, or is lamed, it cannot happen from the ſhoeing, however ſhort the ſhoe may be; if it be not from the different accidents that often proceed from the common methods of ſhoeing, and which may as well happen in the new way: which are 1. The foot being too much ſtraitened; 2. Accidental pricks: 3. The ſhoe nails may bind the enchanneled fleſh too much. 4. The ſhoe may bear too much upon the ſole. 5. When the ſhoe heels preſs upon the weak heels of the horſe. 6. When the ſole is burnt. 7. Wounds of the fleſhy ſole made by the buttreſs.

In my way of ſhoeing I avoid four of theſe accidents. 1. The heel is never ſtrained, becauſe I put no part of the ſhoe upon it: 2. I preſerve the ſole intire, to which I never uſe the buttreſs. 3. The fleſhy ſole can never be burnt, nor wounded by the buttreſs, ſince it never is touched with it. Let the three other accidents abovementioned be taken care of, and I defy them to lame a horſe that has a good foot, let the ſhoe be never ſo ſhort.

Objection IX.

It is ſaid that the horſe is liable to loſe his ſhoes, becauſe they are ſet on with only ſmall nails.

Answer. It is moſt certain that a ſhort ſhoe with ſmall nails, will hold on better than a long ſhoe with large nails; that it has leſs weight; that the lever is ſhorter, which has yet leſs weight of the ſhoe, and by conſequence it ſtrains the clinches the leſs; and does not divide the hoof like a large nail. Moreover I refer to the experiment. As to thoſe who are no friends to the new method of ſhoeing, let them only clinch the nails in a careleſs manner, and the horſe will caſt his ſhoes, as they pleaſe.

OBJECTION X.

It is ſaid that the horſes that are not ſhod with cramps are moſt ſubject to ſlip.

ANSWER. I can affirm that the more dry and more ſmooth the pavement, and the more the frog or horſes heel bears upon the ground, the horſe will be the more ſecure; and he will ſlip much leſs than if he had cramps; even tho' he goes down very ſteep places, or backs ſtrongly. What is moſt certain is, that the leſs ſhoe a horſe wears the leſs he ſlips, becauſe if it were poſſible he could do without any, he would not at all be liable to ſlipping.

I do not, however, engage that the ſhoeing I propoſe would have the ſame effect upon a moiſt or greaſy pavement, or that the horſes will hold on them ſo ſecurely, eſpecially on the hind feet; I think indeed that large nails would in ſuch places be of uſe; which might alſo happen upon a ſlippery ſoil.

I have obſerved that the common ſhoe wears away almoſt half more than that I propoſe; if for example, I ſet on a ſhoe of two pounds weight, it will be half worn off by its ſervice, upon a pavement; and the ſame horſe going the ſame ground, and in the ſame ſpace of time, if he is ſhod with the half-moon ſhoe, it will not be diminiſhed above a third part: the ſhoes may be weighed before they are ſet on, and afterwards, by which the truth of what I advance may be judged of, and we ſhall be convinced by that, that a horſe ſhod according to my method, goes more lightly.

My new manner, which I repeat again, has nothing but prejudice againſt it; anatomy which has taught me the ſtructure of the foot, laid open to me all its advantages, and experience has confirmed them.

I ſhall conclude with the following Reflections, *viz.* That of bleeding horſes in the month of May, even though they are in perfect health; I cannot ſee upon what this cuſtom is founded, eſpecially as they are well; indeed I have ſeen many become ill by it: And, That upon horſes ſaid to be cold in the ſhoulders, or ſeized in the ſhoulders.

I think it is in the joints of the foot, and not in the ſhoulders, the cauſes of laming horſes ought to be looked for.

What leaves no manner of room to doubt that the origin of this diſeaſe is not ſolely in the articulations, is, that after having diſſected horſes whom they thought cold in the ſhoulders, I found that the ſynovia of the joints in the foot was diminiſhed and changed. I believe that when a horſe is very hot, the ſweat which falls from the ſhoulders and neck upon the legs, in proportion as it deſcends from the trunk grows cold upon the lower extremities, which moreover cannot be ſo warm as the muſcles.

It is to this diſtance, to this organiſation, and to the cooling of the ſweat upon theſe parts we may attribute the diminution and alteration of the ſynovia which firſt cauſes the foot to chop or crack and then lames the horſe.

This evil may be prevented by walking a horſe gently after hard riding, that he may cool by degrees, till he is well dried; he is then to have his legs well rubbed down, to be covered and kept very warm, in his cloths for an hour; no riſque is run in carrying him to the water to waſh him, if he is ſplaſhed with dirt, though he is in a ſweat: care muſt only be taken not to let him drink, and to walk him before you put him into the ſtable, that he may not grow ſuddenly cold; the cuſtom of rubbing the legs with ſtraw is ſalutary, being intended to refreſh the parts, and ſo is that of keeping them warm, in as much as it prevents foundering, glanders, and other accidents.

The ſubject would be inexhauſtible if I ſhould enlarge upon all thoſe that are the object of this book; but I leave it to thoſe of my fraternity who are more learned and ſkilful than myſelf to publiſh what I may have forgot: and hope that the little light I have thrown upon our art, which is yet in too much obſcurity, will engage them to bring it to perfection; and for my part, I declare I ſhall be ſincerely obliged not only to thoſe of my profeſſion, but alſo to all lovers of horſemanſhip, if they will be ſo kind as to ſhew me my errors, as well as communicate their own reflections and diſcoveries.

It appears to me that the generality of Engliſh farriers have neither more knowledge nor experience than we have in the ſubject, and particularly in that of the circulation of the blood; nor indeed in a vaſt number of diſeaſes, for which they generally apply the ſame remedies without diſtinction, and without endeavouring to be certainly acquainted with the true cauſe.

Here is the manner in which Mr. Bartlet, * a ſurgeon of London, explains himſelf upon the matter; who has pub-

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* I muſt not omit this opportunity to expreſs my regard for Mr. *William Gibſon*, who has treated the ſubject of Farriery, both in theory and practice, equal to what might have been expected from his long experience; and his anatomical plates are executed with an exactneſs peculiar to himſelf.

liſhed a book this year, which I have cauſed to be tranſlated, entitled: *The Gentleman's Farriery, or a practical Treatiſe on the Diſeaſes of Horſes:* wherein he has pointed out the beſt authors who have wote upon the ſubject.

He ſays, in the 4th chap. which treats of fevers, that he cannot recover from his amazement, that farriers are ſo ignorant in the knowledge of the pulſe; the following are his words: "A due attention to the pulſe is ſo important an article, in order to form a proper judgment in fevers, that it would appear amazing it has ſo much been neglected, if one did not recollect that the generality of farriers are ſo egregiouſly ignorant that they have no manner of conception of the blood's circulation, nor in general have they ability enough to diſtinguiſh the difference between an artery and a vein. With ſuch pretty guardians do we intruſt the health of the moſt valuable of animals!"

I forbear mentioning certain diſcoveries, cures and operations, of which Mr. Bartlet gives the account in his book; which appeared, to me, ſo much the more juſt, as they are founded upon an exact knowledge of the anatomy of a horſe, till I ſhall be able to mention with certainty his method of docking a horſe, and of the deſcription of the machine he has invented for performing that operation.

As I have laid down to myſelf a plan of never giving any thing to the public but what is certain and confirmed by infallible experiments, I will firſt prove it to myſelf before I communicate it.

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AN EXPLANATION OF THE PLATES.

Tab. I. *Repreſents the Bones of the Head.*

FIG. 1. Shews one ſide of the whole Skull of a Horſe, including both the upper and under Jaw.

AA. The orbicular part of the *Cranium* or Skull, which includes the Brain and *Cerebellum.*

B. A proceſs of the occipital bone of the Skull, peculiar to Horſes, and ſome other quadrupeds; in a Horſe called the Noll-bone.

C. Part of the temporal bone, that includes the *Meatus Auditorius,* and bones of the Ear.

DD. Part of the Frontal or Forehead-bone, with the *Os Spongioſum.*

E. The ſharp bone that forms the tip of the Noſe.

FFF. Holes through which ſeveral blood-veſſels and nerves paſs the Skull to the Face.

G. The lower part of the Upper-jaw-bone, where there is a proceſs that forms the arched declivity from the Noſe to the upper Lip.

HHH. That part of the upper Jaw-bone where the ſix upper Teeth, called the Grinders, are inſerted.

I. The lower part of the upper Jaw-bone, where the Inciſors or Nippers are inſerted.

KK. The upper and lower Tuſhes.

L. The ſide of the lower Jaw-bone as united to the upper.

M. The orbit or large hole where the Eye is placed.

N. A proceſs of the temporal Bone, that forms part of the Orbit of the Eye.

O. The round head of the lower Jaw, where it is articulated with the upper.

FIG. 2. Repreſents the lower Jaw-bone, ſeparated from the upper Jaw.

AA. The two ſuperior proceſſes of the lower Jaw that join it to the upper.

BB. The two inferior proceſſes.

C. A hole through which a Nerve of the fourth pair paſſes to the Teeth, &c.

D. A hole through which another branch of the fourth pair paſſes to the Lips and Muſcles of the lower Jaw, &c.

E. The under Fore-teeth or Nippers.

FF. The Tuſhes.

G. A ſmall channel for the paſſage of a Vein, Artery and Nerve, by which the lower or under Teeth are ſupplied and nouriſhed.

H. Another channel along the upper or back part of the ſame bone.

1, 2, 3, 4, 5, 6. On the left ſide ſhews the upper part of the Grinders.

7, 8, 9, 10, 11, 12. Shews the Grinders on the right ſide, with their Roots or Thongs, when part of the Shell or Socket is removed to ſhew their Roots.

TABLE II.

Fig. 1. Shews the upper part of the Skull.

A. The occipital bone or Sinciput.

BBB. The ſeam by which the bones of the Face are joined together, which is plainly viſible in Colts, and many other young animals.

CC. Two other Sutures, which are alſo plain in Colts.

DD. Two *Foramina* or holes through which ſome ſmall Blood-veſſels and Nerves have a paſſage to the upper Jaw and upper Lip.

EE. The griſtles of the Noſe, which in young Horſes are divided by the ſeam marked BBB, but afterwards turn bony and are united.

FF. The orbits or holes of the Eyes.

GG. The lower part of the upper Jaw, where the upper Fore-teeth or Nippers are placed.

Fig. 2. Repreſents the under ſide of the Skull.

AA. The under ſide of the Occipital or Noll-bone, with the large foramen or hole through which the ſpinal marrow paſſes.

BB. Several holes through which ſome branches of the external jugulars paſs into the Brain.

CC. Two *Foramina* or holes through which two branches of the ſeventh pair of nerves of the *Cerebellum* paſs to the upper Jaw, and are diſperſed on the muſcles of the Tongue, the Cheeks, and *Os Hyoides*.

DD. EE. The *Foramina* through which ſeveral nerves paſs, and are diſperſed on the Palate, roof of the Mouth, and Tongue.

FF. Holes through which two ſmall branches of the external jugular vein and artery paſs to and from the *Cerebellum*.

GG. Two *Foramina* or holes, *viz.* one on each ſide, through which branches of the external jugular veins and arteries are diſperſed upon the Cheeks and Temples, with ſome ſmall twigs to the lower Jaw, and the roots of the Teeth. See Tab. I. Fig. 2. and letter G.

HH. Holes through which ſmall twigs of nerves are detached to the Eye.

II. Holes through which other branches of nerves paſs, that are diſperſed on the organs of hearing.

K. The griſly part of the baſis of the Skull, where ſeveral pituitary glands are placed that diſcharge the moiſture from the Noſe.

LL. Two *Foramina* or holes through which a vein and artery paſs to the Palate, and other parts of the upper Jaw.

MM. The *Os Palati*, or bone of the Palate.

NN. The large hole where ſome of the muſcles of the Eye are placed, that with the fat fill up that cavity.

TAB. III. *Repreſents the figure of the firſt* Vertebra *of the* Thorax *in three different views, with a view of the bones of the Trunk; alſo the Breaſt-bone or* Sternon, *with the* Scapula *or Shoulder-blade.*

FIG. 1. Shews the under ſide of the firſt *Vertebra* of the *Thorax* or Breaſt.

AA. The two proceſſes that join the laſt and lowermoſt *Vertebra* of the Neck.

B. The large proceſs that is received into the middle cavity of the ſaid *Vertebra*.

CC. The two lateral proceſſes that are joined to the ſaid *Vertebra*.

FIG. 2. Repreſents the ſame *Vertebra*, with its ſpine turned upwards.

A. Its ſpine.

BB. The upper ſide of the two anterior proceſſes that join the lower *Vertebra* of the Neck.

CC. The upper ſide of the two poſterior proceſſes that are articulated with the lowermoſt proceſs of the ſecond *Vertebra* of the Neck.

DD. Two proceſſes that enter into two cavities of the ſecond *Vertebra* of the *Thorax*.

E. The cavity through which the ſpinal marrow paſſes.

FIG. 3. Repreſents the *Vertebra* of the *Thorax* or Breaſt, with thoſe of the Back and Loins in their proper ſituation.

A. A Proceſs of the firſt *Vertebra* of the *Thorax*, which enters the upper cavity of the lowermoſt *Vertebra* of the Neck.

B. The lowermoſt proceſs of the firſt *Vertebra* of the *Thorax*, which enters the lower cavity of the under or lowermoſt *Vertebra* of the Neck.

CCCC. The Cavities that receive the round heads of the Ribs of the *Thorax*, which join with the *Sternon* or Breaſt-bone.

DE. Shews the upper part of the Ribs that riſe from the Spines of the Back and Loins in their proper articulations including the ſhot Ribs.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18. Repreſents the 18 Spines of the *Vertebra* of the *Thorax*, Back and Loins.

Horſes are often ſubject to fiſtulous Ulcers among theſe Spines, ſo that the ſtructure of theſe parts ought to be well known by thoſe who practiſe farriery.

FIG. 4. Repreſents the firſt or uppermoſt *Vertebra* of the *Thorax* ſideways, as it appears when joined with the other *Vertebræ* in FIG. 4.

A. The Spine which in this bone is ſhorter, more crooked, and more ſpungy than the other *Vertebræ*.

BB. The upper part of the two anterior proceſſes that are articulated with the lowermoſt *Vertebra* of the Neck.

CC. The lower part of the two exterior proceſſes that are articulated with the anterior proceſs of the ſecond joint or *Vertebra* of the Neck.

D. The Seam on one ſide to which the foremoſt Rib is joined, which is the ſame on the other ſide.

E. The round head or proceſs that is articulated, and enters into the cavity of the *Thorax*, and of the lowermoſt *Vertebra* of the Neck.

F. The cavity which receives a proceſs of the ſecond *Vertebra* of the Neck.

Fig. 5. Shews the *Sternon* or Breaſt-bone.

A. The round head of the Breaſt-bone, which ſerves for the origin and inſertion of ſeveral Muſcles.

B. Its lower extremity, called *Cartilago Enſiformis*, or ſword-like cartilage.

C. The cavity into which the Collar-bone on the one ſide is inſerted.

D. The Spine of the *Sternon*.

EEEEEE. The Hollows or Sockets which receive the cartilaginous ends of the anterior Ribs.

Fig. 6. Repreſents the upper ſide of the *Scapula* or Shoulder-blade bone.

A. A broad flat cavity that receives the round Head of the Shoulder-bone.

BB. Proceſſes on the baſis of the *Scapula*, to which the broad ligamentous ſubſtance that ſecures the Joint are attached, with the Tendons of ſeveral ſtrong Muſcles that move the Shoulder and the fore Limb.

C. The Spine or Ridge of the Shoulder blade bone.

DD. The upper and lower *Coſta*, whence ſeveral very ſtrong Muſcles of the Shoulder and Fore-leg have their origins and inſertions.

EEE. Three proceſſes at the extremities of the *Lamina* or plates for the origins and inſertions of the Muſcles.

Tab. IV. *Repreſents the bones of the Fore-leg.*

Fig. 1. Shews the bones of the Fore-leg as they are articulated and joined together.

A. The Back or Arch of the *Os Humeri* or Shoulder-bone.

B. The round Head of the lower end of the Shoulder-bone, that is received into the upper cavity of the Leg bone.

C. The Contortion or Spine of the Shoulder-bone, wherein ſeveral Muſcles have their origins and inſertions.

D. A large proceſs under the upper head, on the fore part of the ſame bone, whereon ſeveral Muſcles have their origins and inſertions.

E. The round head that is covered with a ſmooth cartilage, and is articulated with the *Scapula* or Shoulder-blade.

F. The Leg-bone.

G. The large proceſs that forms the Elbow of a Horſe.

H. The lower end that joins the ſmall bones of the Knee.

KKK, &c. The ſmall bones of the Knee.

LM. The two long bones of the Shank that reſemble the *Radius* and *Ulna* of a Man's Arm.

N. The great Paſtern.

O. The little Paſtern.

P. The Coffin-bone.

Fig. 2. Repreſents the ſmall bones of the Knee, with part of the Shank.

A. The Shank-bone cut through the middle.

B. The bore or hollow of the bone in which the Marrow is contained.

1, 2, 3. 4, 5, 6, 7. The ſeven bones of the Knee.

Fig. 3. Shews the back part of the Shoulder-bone, with its chief proceſſes.

A. The large proceſs that forms the Elbow.

B. The Spine.

CC. The two lower proceſſes of the Shoulder-bone, that are articulated with the *Tibia* or Leg-bone.

Fig. 4. Shews the Shank-bone.

A. The upper part of that bone which in young Horſes is porous and ſpongy, with ſeveral *Foramina*, or little holes for the paſſage of Blood-veſſels and Nerves.

B. The cartilaginous Cap or *Epiphyſis*, by which its upper end is joined to the ſmall bones of the Knee.

C. The lower end of the ſame bone, which is porous and ſpongy, as the upper, and alſo perforated in ſeveral places for the paſſage of Nerves and Blood-veſſels.

D. The lower *Apiphyſis* or Head, which both receives and is received in its juncture with the upper end of the great Paſtern.

Fig. 5. Shews the great Paſtern.

A. The middle of that bone, which is ſmall, but more compact and ſolid than the two ends.

BB. Two Appendages that form the Fetlock.

C. The lower end, by which it is articulated and joined to the leſſer Paſtern.

Fig. 6. Shews the form of the leſſer Paſtern.

A. Its upper round Head, which is joined with the lower end of the great Paſtern.

B. Its lower end, which is articulated and indented into the Coffin bone.

Fig. 7. Repreſents the Coffin-bone.

A. The lower part or Toe.

B. The upper part, which receives the end of the little Paſtern.

Tab. V. *Shews the* Vertebræ *of the Loins*, Os Sacrum and *Hip-bones.*

Fig. 1. Repreſents the *Vertebræ* of the Loins and *Os Sacrum* united together.

A. The *Vertebræ* of the Loins.

1, 2, 3, 4, 5, 6. The ſpinal proceſſes.

3, 3, 3, 3, 3, 3. The ſix lateral proceſſes.

B. The under ſide of the *Os Sacrum.*

1, 2, 3, 4, 5. The five Spines of that bone.

4, 4, 4, 4, 4. Five cavities, with Holes for the paſſage of ſeveral Nerves, Veins and Arteries.

Fig. 2. Shews the under ſide of the *Os Sacrum*, with the bones or junctures of the Tail.

AA. Two ſmall proceſſes by which it is joined to the lowermoſt *Vertebra* of the Loins.

BB. Two other proceſſes that are alſo united with the lowermoſt *Vertebra* of the Loins.

CC. Two cavities that receive the two upper proceſses of the Hip-bones.

DDDD. The ſeveral *Foramina* or holes of the *Os Sacrum*, being eight in number, through which ſeveral branches of Veins, Arteries, and Nerves, have their paſſage to and from the ſpinal Marrow.

E. The large Foramen or hole in which the ſpinal Marrow is contained.

FIG. 3. Shews the Hip-bones, *viz.* the *Ileum*, *Iſchium*, and the *Os Pubis*; often called the *Oſſa Innominata*.

AA. The two anterior points or proceſſes by which the two ſides of the *Ileum* are united to each other, and with the Coxendix.

BB. The flat ſides of the *Ileum* which gives form to the Hips, in the hollow parts of which ſeveral Muſcles are placed, which are mentioned in their deſcription.

CC. The two points of the *Ileum* from whence the oblique aſcending Muſcles of the lower Belly have their origins, and into which the deſcending Muſcles are inſerted.

DD. The large Sockets or Cups that receive the round Heads of the *Oſſa Femoris* or Thigh-bones.

EE. Two large holes of the *Iſchium*, of an oval figure, covered with muſcular fleſh, through which ſeveral Veins, Arteries and Nerves, have their paſſage.

F. The ſeam by which theſe bones are joined, which in young animals is viſible to the Eye, and may eaſily be ſeparated. This bone is called the *Pubis*.

GG. The points of the *Os Pubis*. From this bone the pyramidal Muſcles derive their origins, and others are connected with it.

TAB. VI. *Repreſents the bones of the Hind-leg and Foot, both ſingle and united.*

FIG. 1. Shews the Thigh-bone, Leg-bone, Inſtep, Paſterns and Foot, in their proper articulations.

A. The large round Head of the Thigh-bone, which enters the *Acetabulum* or Cup of the Hip-bones.

B. Another proceſs of the ſame bone, called its leſſer *Trochanter*.

C. The great *Trochanter*. In theſe, and in the ſtrong ligaments that ſurrounds the Hip-joint, ſeveral Muſcles have their origins and inſertions.

DD. Shews the body of the Thigh-bone, with its ſpines, contortions, and protuberances; from whence ſeveral Muſcles that move the Leg are derived, and in which others are inſerted.

E. The Stiffle or Knee-pan.

FF. The two lower round proceſſes of the Thigh-bone, which are joined with the Leg-bone.

G. The upper head of the leg-bone, covered with its cartilaginous *Apiphyſis* or Cup, for its more eaſy motion.

H. The Shank or body of the Leg-bone, with its ſpines.

I. The lower end of that bone, which is united with the ſmall bones of the Hock.

K. The ſmall bones in the bending of the Hock.

L. The large proceſs that forms the Heel of the Hock.

M. The Inſtep-bone.

N. The Splinter-bone, that reſembles the *Fibula* of the human Leg.

O. The lower part of the Inſtep-bone, that joins with the ſmall bones of the Paſtern-joint.

P. The ſmall bones and cartilages that fill up the cavities thereof.

Q. The great Paſtern, which anſwers to the *Tarſus* of the human Foot.

R. The leſſer Paſtern, which anſwers to the *Metatarſus*.

S. The Coffin-bone.

T. The proceſs of the hindermoſt ſmall bone, which reſembles the Heel of the Hock, and forms the Fetlock; and is properly the Heel-bone of a Horſe.

Fig. 2. Shews the Leg-bone.

A. The two ſharp proceſſes that are received into the lower end of the Thigh-bone.

B. C. The two ſplinters that are ſituated one on each ſide of the ſaid bone, near its protuberance.

DD. Two ſharp proceſſes that are received into the head of the Inſtep-bone.

Fig. 3. Shews the *Patella* or Knee-pan, called the Stifle of a Horſe.

A. The convex or round part of the Stifle.

B. The ſtrong ligament that ties it to the *Tibia* or Leg-bone.

Fig. 4. Shews the Inſtep-bone, which correſponds with the Shank-bone of the Fore-leg.

A. A round cartilaginous proceſs that joins the lower end of the Leg-bone, and the ſmall bones of the Hock.

B. The body of the Inſtep-bone.

CC. The two ſplinter-bones or bodkins that are more diſtinct, and proportionably larger on this bone than on the preceding.

DD. Two round proceſſes that are united with the great Paſtern, and ſmall bones of the Fetlock-joint.

E. A thin rotatory proceſs that turns in a narrow channel of the great Paſtern.

Fig. 5. Shews the Heel-bones of the Hock.

A. The cartilaginous *Apiphyſis*, or Top, into which the great maſter Sinew is inſerted.

B. The ſmall Neck or proceſs of that bone.

CC. Two ſmall uneven bones, which are firmly united to it, within whoſe proceſſes Veſigons or Windgalls are often bred.

Fig. 6. Repreſents the *Os Calcis* or Heel-bone, which gives form to the Fetlock, and reſembles the laſt deſcribed bone, but much ſmaller.

A. The Head, into which the back Sinew behind is inſerted: Windgalls are often bred between this and the Inſtep-bone, in the cavities on both ſides the Sinew.

BB. Two cavities that receive two proceſſes of the great Paſtern.

C. A round proceſs that enters into a long cavity of the ſaid Paſtern.

Fig. 7. Shews the Coffin-bone, which correſponds with the laſt joints of the Toes in men.

A. The Coffin that is covered with the Hoof.

B. The hollow that receives the round Heads of the lower Paſtern.

Tab.

An Explanation of the Plates.

Tab. VII. *Shewing the whole Skeleton of a Horſe.*

A. The Head, including all its parts as articulated with the Neck.

BB. The Blade-bone or *Scapula.*

C. The Shoulder-bone.

DD. The Leg-bones.

EE. The Joints of the Knees, with the ſmall ranges of bones.

FF. The two proceſſes in the bending of the Knees or *Rotulæ* which both facilitate its motion and prevent diſlocation.

GG. The Shank-bones.

HH. The Paſtern-joints.

II. The leſſer Paſtern.

KK. The Coffin-bones of the Fore-foot.

LL. The Hip-bones, or *Oſſa Innominata.*

MM. The Thigh-bones.

NN. The Hind-leg-bones.

OO. The bones that form the Heel of the Hock.

PP. The Oſlets or ſmall bones of the Hock.

QQ. The Inſtep-bones.

RR. The great Paſtern.

SS. The little Paſtern.

TT. The Coffins.

V. The *Sternon* or Breaſt-bone.

X. The *Cartilago Enſiformis,* or ſword-like cartilage, being the point of the Breaſt-bone.

YYYY. The Ribs.

Z. Their cartilaginous endings on the Breaſt and Belly.

I. II. III. IV. V. VI. VII. The ſeven *Vertebræ* of the Neck.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18. The eighteen *Vertebræ* of the *Thorax* and Back.

1, 2, 3, 4, 5, 6. The ſix *Vertebræ* of the Loins.

1, 2, 3, 4, 5. The five Spines of the *Os Sacrum.*

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18. The eighteen Joints of the Coxendix and Tail.

Tab. VIII. *Shews the external Muſcles of a Horſe, as they appear on one ſide, when the Skin and fleſhy Panicle is removed.*

A. The orbicular Muſcle of the Eye.

a. The temporal Muſcles, and Muſcles of the Cheeks.

b. The orbicular Muſcle of the Mouth.

c. The Muſcles of the Noſe.

BBB. The Muſcles of the Neck, with thoſe that deſcend to the Back and Shoulders, to aſſiſt in the motions of thoſe parts.

C. A ſtrong nervous ligament under the Mane, which keeps the Neck firm and ſteady in its motions.

D. The pectoral Muſcles.

EEEE. The proper Muſcles of the *Scapula* or Shoulder-blade, with thoſe that move the Shoulder.

F. The Muſcles that move the Fore-leg.

GG. The Muſcles that move the Paſtern and Foot.

HH. The Muſcles of the Back and Loins.

IIIII. The principal Muſcles of the Hips that move the Thigh.

K. The Muſcles that move the Hind-leg.

LL. The Muſcles that move the Hind-Paſtern and Foot.

MM. The Inſtep-bones of both the Hind-legs, as expoſed in the diſſection of the Muſcles.

NNN. The Ribs as they appear when the Skin and fleſhy Panicle and Muſcles are removed.

1, 2, 3, 4, 5. The *Seratus Anticus*, from their reſembling the teeth of a ſaw.

6, 6, 6, 6, 6, 6. The *Seratus Poſticus*. Both which aſſiſt in widening the *Thorax* or Cheſt, in reſpiration.

Tab. IX. *Shews a Horſe with his Face towards us, that we may view the Muſcles as they appear on his Fore-parts.*

AA. A pair of the Muſcles belonging to the Ear.

BB. Another pair of the Muſcles of the Ear.

CC. Another pair belonging to the Ear.

DD. The temporal Muſcles.

EE. A pair of Muſcles of the Eye-lids.

FF. Another pair belonging to the Eye-lids.

GG. A pair of Muſcles that belong to the Lips and Noſe.

H. Another pair belonging in common to the Lips and Noſe.

II. Muſcles that move the Fore-leg and Elbow.

KK. The origins of ſome of the Muſcles of the Head and Neck.

L. The Muſcles of the *Larynx*.

MMMM. Two principal Muſcles belonging to the Head and Neck.

NN. Another principle Muſcle belonging to the Neck.

OO. Muſcles belonging to the Fore-leg and Elbow.

P. The Muſcles called the *Deltords* of the Shoulder.

Q. Part of the intercoſtal Muſcles.

R. *Serratus Poſticus*, with part of the oblique Muſcles of the lower Belly.

SSS. The principal Muſcles of the Hips, being thoſe that chiefly move the Hind-legs.

TT. The Muſcles of the Knee and Hock, that move the fore and hind Paſterns.

Tab. X. *Shews two different views of the Muſcles of the Fore leg of a Horſe.*

Fig. 1. Shews the anterior or fore-part of the Fore-leg.

AA. The principle Muſcle of the Knee, which aſſiſts in moving the Leg.

B. One of the chief Muſcles of the Paſterns, which divides below the Knee in two Tendons which are inſerted into the Paſtern.

C. A ſtrong annular Ligament, by which the Tendon of the laſt deſcribed Muſcle is braced down to the Knee, being of ſo great a length down to the Paſtern, that without ſuch an attachment would intirely loſe its ſpring and ability to motion.

D. The uppermoſt Muſcle of the Knee, which runs obliquely acroſs, and is inſerted in the hind-part of it.

E. The axillary Vein, which appears when the Skin is carefully taken off, to ſhew the Muſcles in their proper ſituation.

FF. The Shank-bone, as it appears when the anterior Muſcles of the Leg are diſſected.

FIG. 2. Repreſents the back or hind-part of the Fore-leg.

AA. Two of the principal Muſcles that bend the Knee.

BB. Another principal Muſcle of the Knee.

CC. One of the principal Muſcles that bends the Paſtern.

D. Another Muſcle of the Paſtern.

EE. The great Tendon or back Sinew which is inſerted into the Heel, and is plainly viſible when the Muſcles are diſſected.

F. The ſtrong annular ligament that braces the back Sinew under the Paſtern, and is often the ſeat of humours and ulcers, in foul or fleſhy-legged Horſes.

G. The Tendon of another Muſcle of the Paſtern, that runs on one Side of the back Sinew, and partly under it.

H. So much of the Shank-bone as appears in this view.

I. The Splinter-bone of the Fore-leg, which correſponds with the *Radius* of the human Arm.

TAB. XI. *Repreſents two different views of the Hind-legs of a Horſe, to ſhew the principal Muſcles.*

FIG. 1. Shews the anterior or fore-part of the Hind-Leg.

AAAA. One of the principal Muſcles of the Hind-paſtern, which deſcends from the Hip to the Heel.

B. One of the chief Muſcles that bends the Hock.

C. One of the principal Muſcles that extends the Paſtern.

D. A ſmall fleſhy Muſcle that helps to turn the Hind-leg.

EE. Two ſtrong cartilaginous Ligaments that brace down the long Muſcles of the Paſterns that deſcend from the inſide of the Thigh.

FF. The bones on the inſide of the Hock, that appear when the Skin is taken off to ſhew the Muſcles.

GG. Branches of the internal crural Veins.

H. The Inſtep-bone.

I. A rough bony proceſs, in which ſeveral Muſcles have their origins and inſertions.

KL. The Tendons of ſome of the Muſcles that are inſerted into the Heel.

FIG. 2. Shews the hind or back part of the Hind-leg, with its Muſcles.

A. A Muſcle of the Leg called the *Sartorius* Muſcle in men, and helps to turn the Leg inwards.

B. One of the principal Muſcles of the Hock.

C. Another principal Muſcle of the Hock.

D. One of the Muſcles of the Thigh, cut off above its inſertion into the Leg.

E. One of the Muſcles of the Leg, inſerted into the upper inſide proceſs of the Hock.

FF. The combination of ſeveral Muſcles that are united in the great Tendon or maſter Sinew, that is inſerted into the Heel of the

Hock, called in the human body the *Tendo Achillis.*

G. One of the Paſtern Muſcles that paſſes over the outſide of the Hock.

H. The ending or termination of the great Tendon that forms the Heel of the Hock.

II. The Muſcles of the Paſterns that run over both ſides of the Paſtern-joint.

KK. The tendinous Muſcle that is inſerted into the Fetlock, and is ſometimes called the back Sinew of the Hind-leg.

LL. The Tendons of the Muſcles that deſcend on both ſides of the ſmall of the Inſtep or Hind-leg, and are inſerted into the Coffin-bone to move the Foot, with ſome twigs of Veins which appear when the Skin is taken off.

M. The tendinous part of a Muſcle that paſſes down to the bottom of the Foot, correſponding with the *Plantaris* in the human Foot, and forms in a Horſe the fleſhy part of the Frog, *&c.*

N. Other nervous Muſcles that are inſerted into the lower proceſſes of the leſſer Paſtern, and into the Coffin-bone.

TAB. XII. *Repreſents the Guts, as they appear in their natural ſituation, when the lower Belly is laid open.*

AAAAAAAA. The Gut colon, its ſeveral circumvolutions and windings, with its folds and purſes: under which lie the ſmall Guts.

B. The *Cæcum* or blind Gut.

C. The ſtreight Gut.

D. The *Penis* or Yard.

E. The Fundament.

TAB. XIII. *Repreſents the Stomach in two different views, the one whole, the other cut open, to ſhew the* Rugæ *or furrows on its inſide. Alſo the courſe of the* Chyle, *&c.*

FIG. 1. Shews the Stomach intire.

AAA. The outſide of the Stomach, with the ramifications or branchings of the Blood-veſſels.

B. Part of the upper Orifice or Gullet.

C. The *Pyloris*, or lower Orifice, which enters the ſmall Guts.

FIG. 2. Shews the Stomach, with a piece of it cut off, that the inſide may be ſeen.

AAA. The outſide of the Stomach.

B. The Gullet cut off where it opens into the Stomach.

C. The lower Orifice.

FIG. 3. Shews the lacteal Veſſels proceeding from the ſmall Gut to the *Ductus Thoracius.*

AAA. Part of the ſmall Gut cut off, with the lacteal or milky veſſels riſing out of it.

BBB. The courſe of the ſame veſſels along the Meſentery to the Thoracick Duct; with the ſmall Blood-veſſels of the Meſentery.

CCC. The Thoracick Duct cut off, which receives the *Chyle* or milky liquid from the ſmall Guts by the lacteal Veſſels, *&c.*

DD. Part of the inſide of the Back-bone.

EEEE. Part of the Ribs cut off.

TAB. XIV. *Sheweth the principal parts contained in the lower Belly of a Horſe, when the Guts are carefully taken out and removed.*

AA. The Midriff turned up to ſhew its under ſide.

BBBB. The Liver.

C. The Gall-pipe cut off before its entrance into the *Duodenum* or ſmall Gut.

D. The aſcending great Vein, or *Vena Cava.*

E. The *Aorta Deſcendens*, or the deſcending great artery.

FF. The Ureters which convey the urine from the Kidneys to the Bladder.

GG. The Kidneys.

HH. The ſpermatick Veſſels on the right ſide.

II. The ſpermatick Veſſels on the left ſide.

KK. The *Teſtes* or Stones.

LL. The *Vaſa Deferentia.*

M. The Bladder.

N. The *Inteſtinum Rectum*, or Straight Gut.

O. The *Penis* or Yard.

TAB. XV. *Shews the Lungs, the Head of the Windpipe, with two different views of the Heart.*

FIG. 1. Repreſents the whole ſubſtance of the Lungs.

AA. Part of the Windpipe.

B. The left Lobe of the Lungs, covered with its proper Membrane.

CC. The principal branch of the Windpipe on one ſide, with its ſeveral ramifications through the Lungs.

DDDD. The innumerable Veſſicles or Air-bladders that ariſe from the extremities of the ſmall Branches of the Windpipe, when they are blown up and filled with air.

FIG. 2. Shews the *Larynx*, with part of the Windpipe.

A. The Epiglotis.

B. The *Cartilago Scutiforme*, or ſhield-like cartilage.

C. The cartilaginous rings of the Windpipe.

FIG. 3. Shews the left Ventrcile of the Heart laid open.

AA. The external or fleſhy ſubſtance of the Heart.

BBB. The pulmonary Vein which opens into the left Ventricle.

C. The left Ventricle which receives the Blood from the pulmonary Vein.

FIG. 4. Shews the right Ventricle of the Heart laid open.

AA. The *Vena Cava* cut off above and below.

B. The entrance of that Vein into the right Ventricle.

CC. The inſide of that Ventricle, with the Valves and the *Fibrillæ*, or little Fibres that faſten the ends of the Valves to the ſubſtance of the Heart.

D. The *Apex* or point of the Heart.

TAB. XVI. *Repreſents the principal Veins, as they are diſtributed into all parts of the Body of a Horſe.*

AA. The *Vena Cava*, or hollow Vein which receives the Blood from all the other Veins, in order to its conveyance into the Heart.

BB. The axillary Veins which receive the Blood ſrom the Fore-legs, Breaſt and Belly, *&c.*

CC. The Veins of the off Leg before, which empty themſelves immediately into the axillary Veins.

DD. The Veins of the left or near Leg before, which enter the left branch of the axillary Vein.

EE. The external jugulars, with their ſeveral ramifications that return the Blood chiefly from the external parts of the Head and Neck into the *Cava.*

FF. The internal jugular Veins that return the Blood chiefly from the Brain, *&c.*

GG. The Veins diſperſed on the Face and Cheeks, that empty themſelves chiefly into the external Jugulars.

H. The *Vena ſine Pari*, or *Azygos*, which opens into the deſcending Trunk of the *Cava* before it reaches the Heart.

II. The coronary Vein, with its ramifications upon the Heart.

KK. The Veins peculiar to the Midriff.

LL. Thoſe peculiar to the Liver.

MM. The Veins peculiar to the Kidneys.

N. The junction of the Iliac Veins in the *Cava Aſcendens*, or the aſcending *Cava.*

OO. The Veins of the Teſticles.

PP. The branches of the Illiacs that are diſperſed upon the Thighs and Hind-legs.

Q. The Veins of the Tail.

RR. The crural Veins that are diſperſed on the Legs and Feet.

SS. The Veins that run along each ſide of the Belly, which receive the Blood from all the external parts thereof, and open into the Iliacs near the Groins.

TAB. XVII. *Repreſents the* Vena Porta, *as it riſes from the Guts and other Inteſtines, with its diſtribution through the Liver.*

A. The Trunk of the *Vena Porta.*

B. A principal branch that riſes from the Stomach, the Spleen, *Duodenum*, *Omentum*, &c. and opens into the Trunk of the *Porta* near its middle.

C. Another principal branch that riſes chiefly from the Veins of the Meſentery, the Gut Colon, and from the *Rectum* or Streight Gut.

D. A conſiderable branch from the Meſentery, the Colon and *Cæcum*, or blind Gut.

E. Two conſiderable branches from the Meſentery and Colon that unite near the Trunk of the *Vena Porta.*

FF. Several conſiderable branches of Veins that ariſe from the Meſentery, and from all the ſmall Guts and other Inteſtines, and open into the entrance of the *Vena Porta.*

GGGG. The branches of the *Vena Porta*, as they are diſtributed through all parts of the Liver.

An Explanation of the Plates.

Tab. XVIII. *Shews the Arteries and their diſtribution into all parts of the Body of a Horſe.*

A. The Heart, with its coronary Arteries.

B. The deſcending Trunk of the *Aorta* or great Artery, making a channel along the Back.

CC. The ſubclavian Arteries that paſs under the Collar-bone to the Fore-legs.

DDDD. The ſuperior and inferior cubital Arteries that are diſperſed along the Fore-legs and Feet, conveying the Blood for the nouriſhment of thoſe parts.

EE. The external carotids that carry the Blood upwards to the Head, ſending out branches as they paſs along to the muſcular parts of the Neck.

FF. The internal carotid Arteries, which alſo take their courſe to the Brain and other parts of the Head, into which they enter by different *Foramina* or holes.

GGGG. The moſt conſpicuous Branches of the external and internal Carotids, as they communicate one with another in the Head and upper part of the Neck and Jaws, and have their different names and denominations from the ſeveral places to which they are detached.

HHHHHH. The intercoſtal Arteries which paſs out between the Ribs on each ſide, and are beſtowed on all parts of the Trunk of the Body.

II. The Arteries that are beſtowed on the Midriff or Skirt on the Stomach, and other internal parts.

KK. The Arteries that are diſperſed on the Spleen or Melt, the Liver, Meſentery, and ſmall Guts.

LL. The Arteries beſtowed on the Kidneys.

MM. The lumbal Arteries that are diſperſed on the Bladder, *Inteſtinum Rectum*, and other parts within the *Pelvis*.

NN. The ſeminal Arteries that go to the Teſticles.

OO. The Arteries diſperſed on the Teſticles.

PP. The Arteries that proceed from the Iliacs, and are beſtowed on the Tail.

QQ. The Iliac Arteries that branch off into the Thighs.

RR. The crural Arteries that are beſtowed on the Legs and Feet.

Tab. XIX. *Shews one ſide of the Head and Neck of a Horſe, with the principal Veins as they appear when the Skin and Fat are removed.*

AAA. The external jugular or Neck-vein, which is chiefly opened in moſt of the diſorders of Horſes.

B. One of the principal branches of that Vein, which divides under the Jaw, and receives ſome branches from the internal parts of the Head, and others from the Temples, Cheeks, and from the upper Jaw.

C. Another principal branch of the ſame Vein, which divides itſelf behind the upper Jaw, and receives branches from the Parotid Glands, and from the *Cerebellum*; through the *Foramina* or holes in the baſis of the Skull, and other more external branches from behind the Ear.

D. A branch of the ſame Vein which proceeds externally from the Eyes and Temples, and are called the Temporal, and, by our Farriers, the Temple Veins.

EE. The external branches called the Cheek Veins, which open into the Jugular-vein.

F. The union of two branches, one from the Noſe along the Upper-Jaw, and another reflected back from its paſſage through the fore-part of the Skull below the Eye.

GG. Two branches, one that proceeds from the upper Jaw, and the other from the under Jaw.

HHH. Several ſmall branches from the Muſcles of the fore-part of the Neck, that open directly into the under ſide of the jugular or Neck Vein.

I. Two branches that proceed from the Muſcles of the lower part of the Neck and Shoulders, and open into the ſame Vein.

K. Two other branches that proceed from the upper part of the Neck, and open into the upper part of that Vein.

TAB. XX. *Repreſents the Nerves, and their diſtribution into all parts of the Body of a Horſe.*

AA. The firſt pair are the olfactory Nerves that go to the Noſe, and the organs of ſmelling.

BB. The ſecond are the optic Nerves that contribute to ſight or ſeeing.

CC. The third pair, *viz.* the *Motores Occulorum*, or Movers of the Eyes, are the Nerves that are ſpread on the Globe of the Eye.

DD. The fourth, called the pathetick Nerves, becauſe they expreſs ſome particular paſſions.

EE. The fifth pair, that are chiefly ſpread on the Eye-lids and Muſcles of the Eyes, and aſſiſt their motions.

FF. The ſixth pair go to the *Abductor* Muſcle of the Eye, and, communicating with a reflected branch of the fifth, forms the intercoſtal.

GG. The ſeventh pair go chiefly to the Ear, and are diſperſed on the organs of hearing.

HH. The eighth pair, called the *Par Vagum*, becauſe they form the recurrent Nerves, which ſend branches to the *Viſcera*, and communicate with almoſt all the other Nerves.

II. The ninth are chiefly ſpread on the ſubſtance of the Tongue, and are the inſtruments of taſting.

KK. The tenth pair belong chiefly to the *Extenſor* Muſcles of the Head.

LL. The branches that go to the Shoulders.

MM. The branches that go to the Fore feet and Paſterns.

NN. The recurrent Nerves.

OO. The branches that are ſpread on the Thighs, from the *Vertebra* of the Loins.

PP. The branches that are diſtributed on the Hocks, from the *Os Sacrum.*

QQ. The Nerves that are diſtributed on the hind Paſterns and Feet.

1, 2, 3, 4, 5, 6. The Nerves that proceed from the medullary ſubſtance contained in the ſix *Vertebræ* of the Neck.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18. The Nerves that proceed from the medullary ſubſtance or Pith of the eighteen *Vertebræ* of the *Thorax* and Back, which go to the Ribs and all parts of the Trunk.

1, 2, 3, 4, 5, 6. The Nerves that proceed from the Pith or medullary ſubſtance of the ſix *Vertebræ* of the Loins.

IIIII. The Nerves that proceed from the Pith of the three uppermoſt *Vertebræ* of the Tail.

TAB. XXI. *Repreſents the Eye of a Horſe in ſeveral views.*

FIG. 1. Shews the Eye, with the *Tunica Adnata* or upper Tegument removed.

AAAA. The *Tunica Adnata* ſeparated from the Body of the Eye, and reverſed or turned back.

B. The *Iris.*

CC. The *Cornea.*

D. The Pupil.

FIG. 2. Shews the Eye taken out of the Head, with the Muſcles as they appear without diſſection.

A. The Pupil, or Sight of the Eye, as it is commonly called.

B. The *Cornea* or horny coat of the Eye.

CC. The *Tunica Adnata,* or common coat of the Eye.

DDD. The Muſcles of the Eye.

EEE. Their inſertions into the Eye.

F. The optic Nerve cut off.

FIG. 3. Repreſents the Eye, with the Muſcles ſeparated and diſſected.

AAAA. The four principal Muſcles of the Eye, ſeparated and ſpread open.

BB. The white of the Eye, which in a Horſe is much variegated with brown lines or ſtreaks.

CC. The *Cornea* or horny coat of the Eye.

D. The place of the Pupil.

TAB. XXII. *Repreſents, in two figures of the Hind-leg, the Blood ſpavin and Bone-ſpavin.*

* FIG. 1. A. Shews the inſide of the Hock, with the *Varix* or Blood-ſpavin, as the obſtructed Veins appear in that diſtemper.

* See page 168.

Fig. 2. B. Shews the Bone-ſpavin, on the inſide of the lower part of the Hock, and upper end of the Inſtep-bone.

Tab. XXIII. *Repreſents in two figures the Ring-bone and Curb.*

Fig. 1. Shews the Fore-legs of a Horſe in a ſtraight poſition.

AAA. The Ring-bone or circular hard ſwelling round the Paſtern-joint.

Fig. 2. Shews the Hind-leg of a Horſe in a bending poſition.

A. The Heel of the Hock.

B. The Curb or hard ſwelling, as it appears when grown to its full extent.

Tab. XXIV. *Repreſents in two different views of the Fore-leg, the various kinds of Splents.*

Fig. 1. The hinder or back Part of the Fore-leg, to ſhew a thorough Splent.

AA. The Splent ſituated between the Shank-bone and the back Sinew, and appearing on both ſides thereof.

Fig. 2. The Fore-leg ſideways, to ſhew the more uſual and ordinary kind of Splents.

B. A Splent under the Knee, near the Joint.

A. A Splent on the middle and fore-part of the Shank-bone, disfiguring the Leg.

C. A more dangerous Splent on the back part of the Shank-bone, near the inſertion of the Back-ſinew.

Tab. XXV. *Repreſents in two figures the ſeveral kinds of Windgalls on the Fore-legs.*

Fig. 1. Shews the Windgalls or flatulent Tumors that appear on the fore-part of the Leg.

A. B. Two Windgalls that ſometimes ariſe under each ſide of the Knee.

C. A Windgall on the Shin, between two muſcular Tendons a little above the Fetlock-joint.

Fig. 2. Shews the Windgalls on the hind part of the Fore-leg, with an uncommon one above the Knee.

A. A large Windgall between the Tendons of the Muſcles above the Knee.

B. A Windgall under the Knee behind.

CC. The common and uſual Windgalls on each Side the back Sinew.

Tab. XXVI. *Shews the Wens and Tumors to which ſome Horſes are ſubject about their Hocks.*

Fig. 1. A. A large Wen, as it appears on the Heel of the Hock.

Fig. 2. A. B. C. Windgalls or flatulent Tumors, that ariſe in all the hollow parts of the Hock.

Tab. XXVII. *Repreſents a large Wen on the Elbow of a Horſe mark'd* A.

An Explanation of the Plates.

Tab. XXVIII. *Repreſents the Poll-evil.*

A. A large ſwelling behind the Poll.

B. The matter running from the Orifice on the Top of the Poll, where it uſually breaks.

Tab. XXIX. *Shews the* Fiſtula, *viz. a Tumor that ſometimes ariſes on the Withers of a Horſe, and produces a fiſtulous Ulcer.*

A. The Tumor as it appears on one ſide of the Withers.

B. The appearance it makes on the other, when it riſes on both ſides.

C. The place where it uſually breaks when it comes to maturity.

D. The matter running from the Orifice.

Tab. XXX. *Repreſents a Quittor and falſe Quarter in two figures.*

Fig. 1. Shews the Quittor.

A. The Orifice from whence the matter generally flows.

B. The matter running down the Quarter.

CC. The ſwelling round the Coronet.

D. The ſinking and depreſſure of the Hoof, cauſed by the malignity of the Ulcer.

Fig. 2. Shews the falſe Quarter.

A. The ſeam on the Quarter, from the Coronet to the bottom of the Foot.

Tab. XXXI. *Shews the Parts of the Horſes Foot where the Canker appears.*

Fig. 1. Repreſents the Horſe's Foot turned to ſhew the Sole.

A. The Part affected.

Fig. 2. Shews alſo the Sole turned up.

B. The Appearance of the Foot in the worſt State of the Canker.

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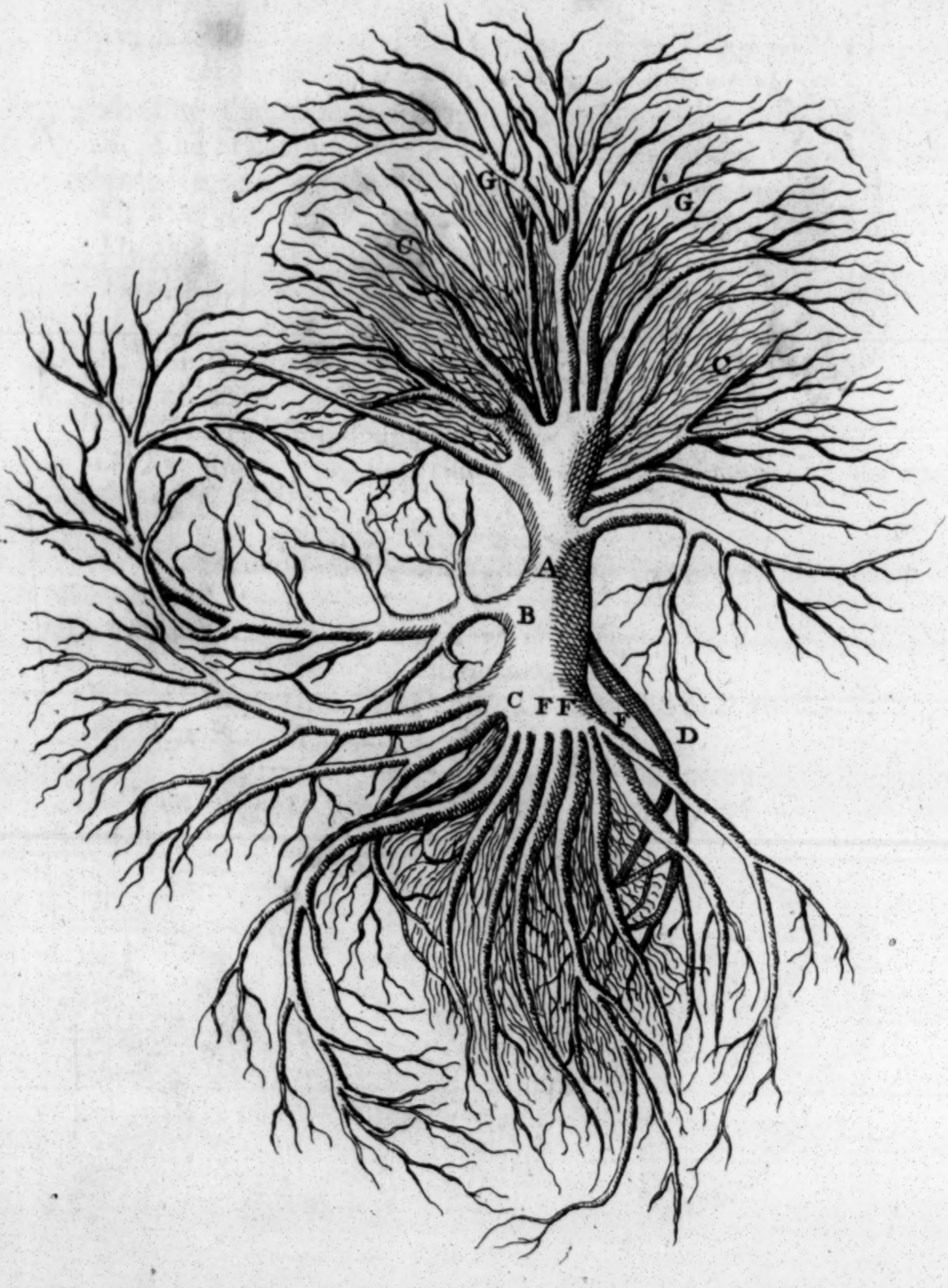
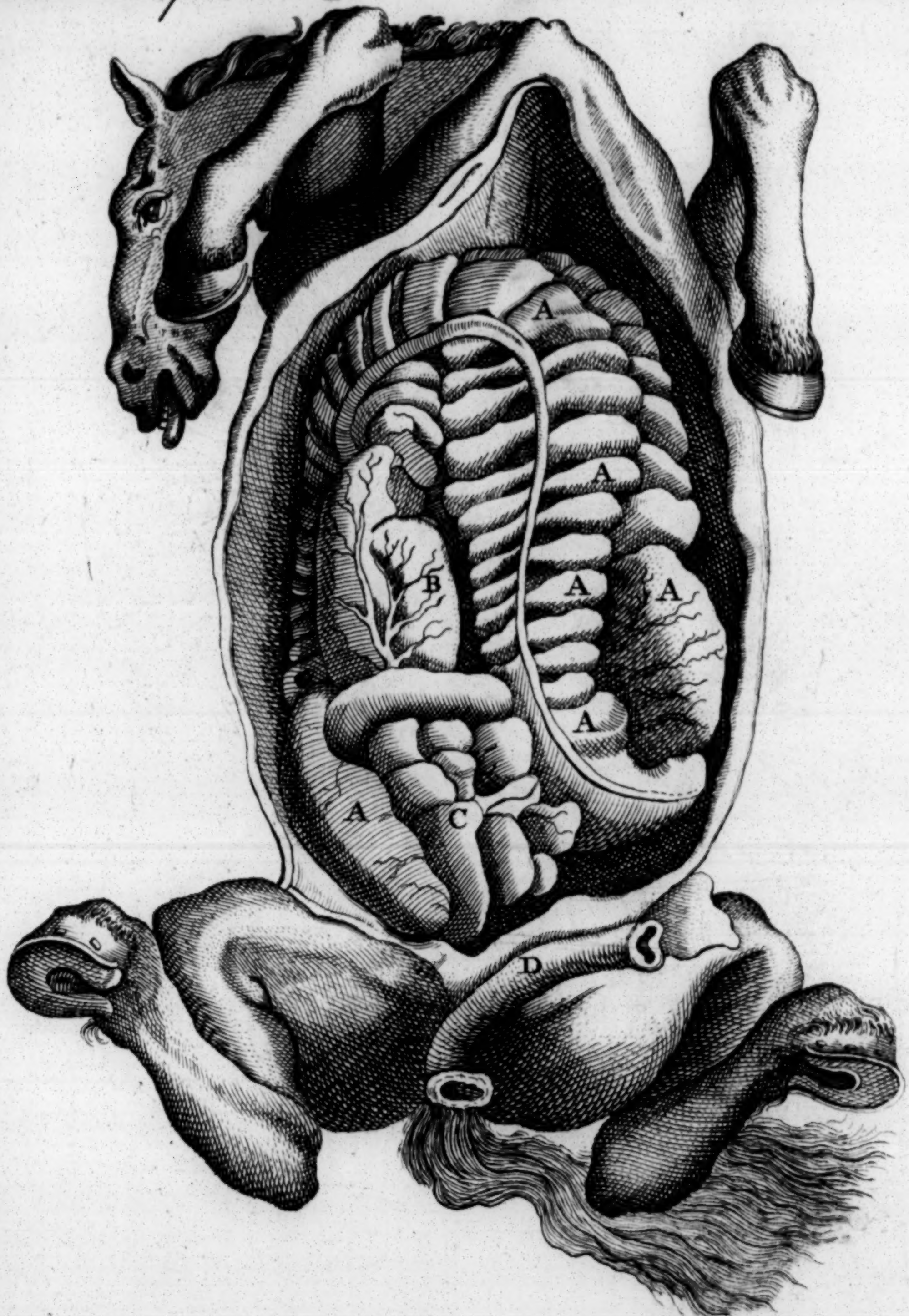
TAB.XVII. p.71. Vol. I.

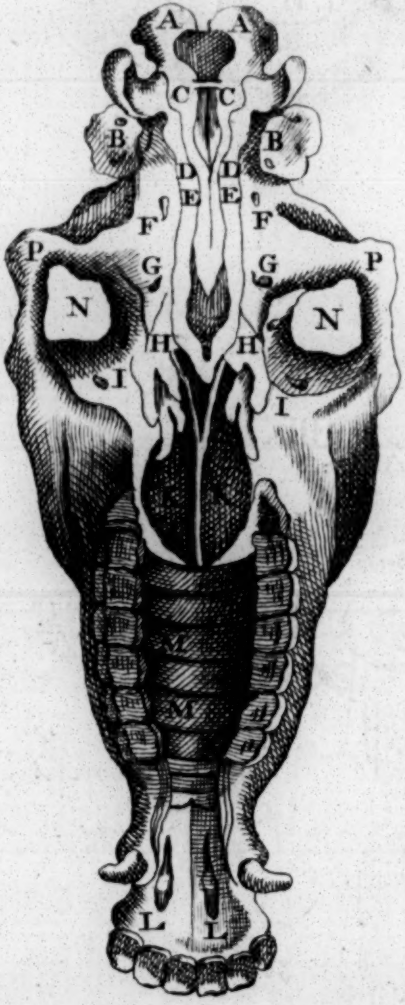


TAB. XII. *p. 62. Vol.* I.



TAB. II. *p. 36. Vol.* I.

Fig. II.



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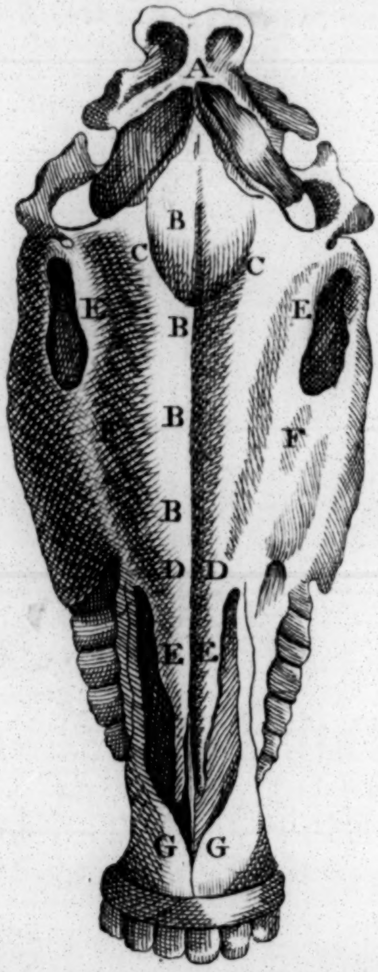


TAB.XXI. *p.* 89. *Vol.* I.

Fig. II.

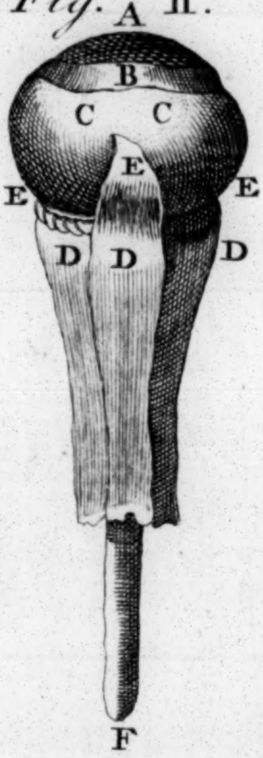


Fig. I.

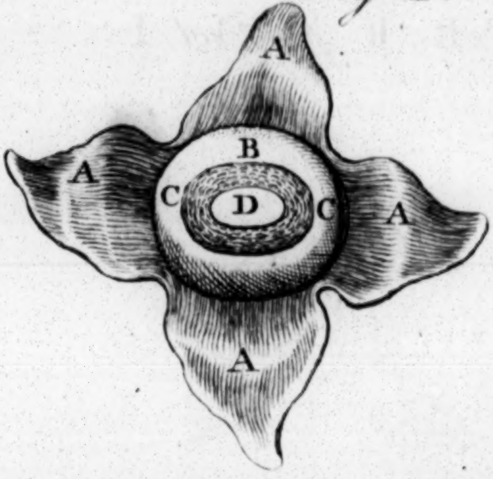
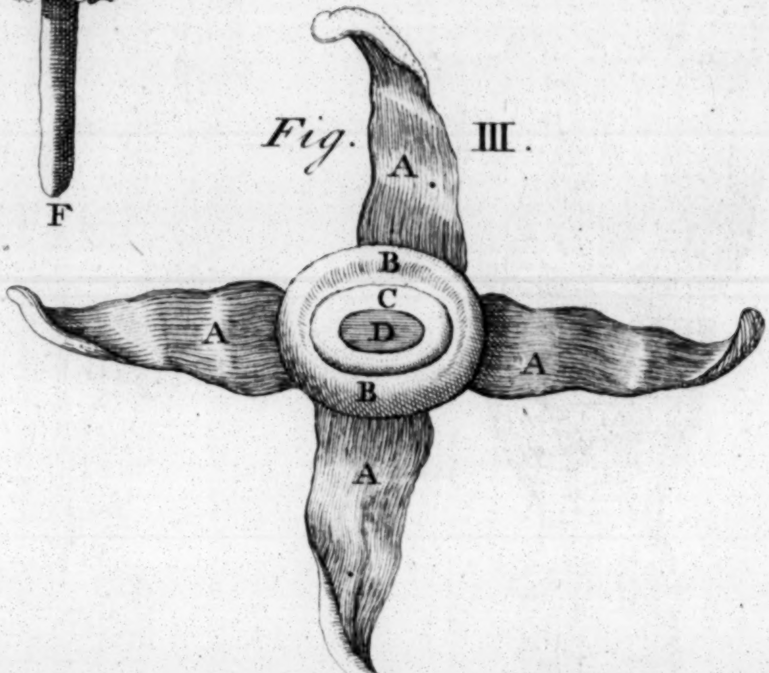


Fig. III.



TAB. V. *p. 40. Vol. I.*

Fig. I.

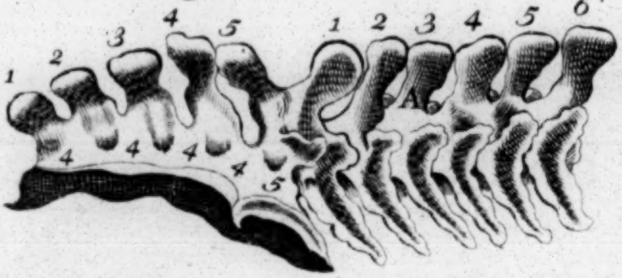
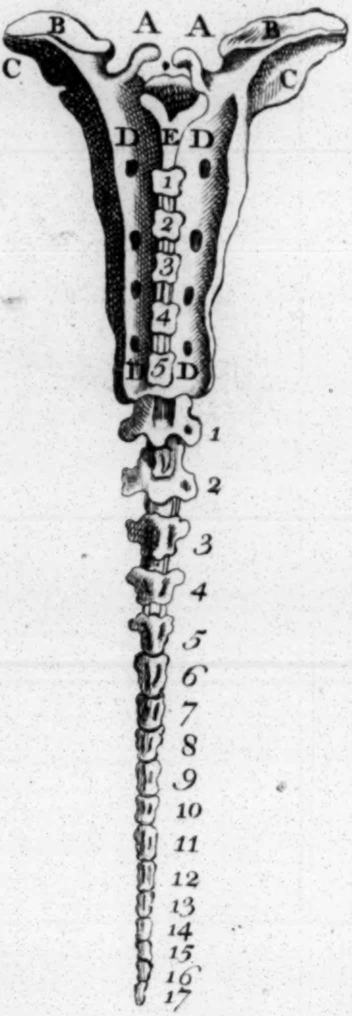


Fig. II.



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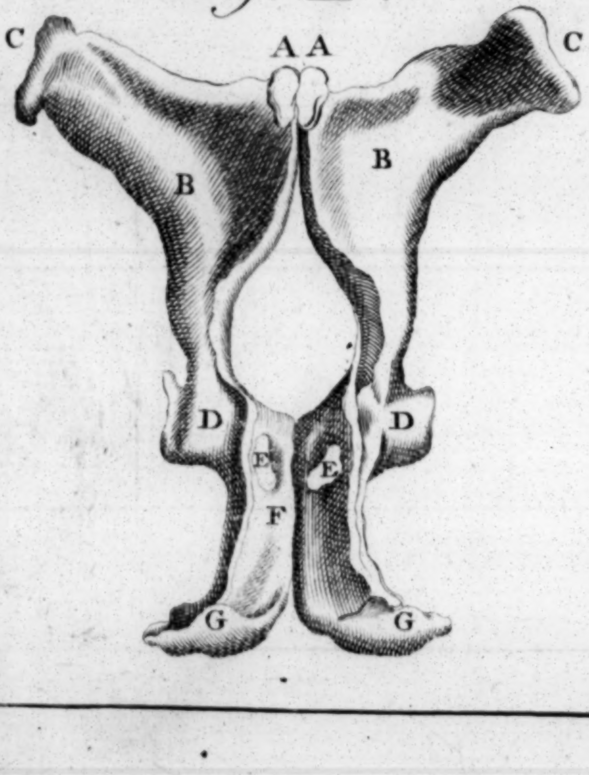
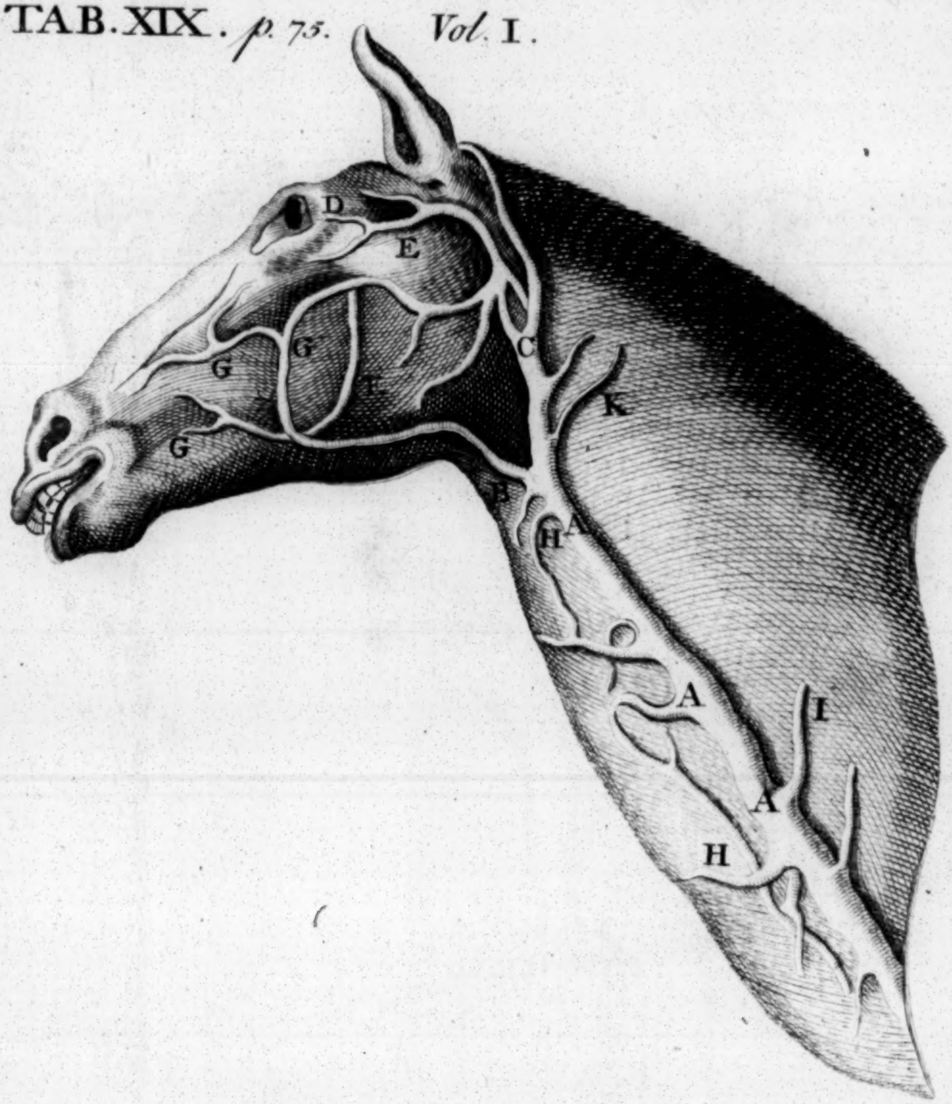
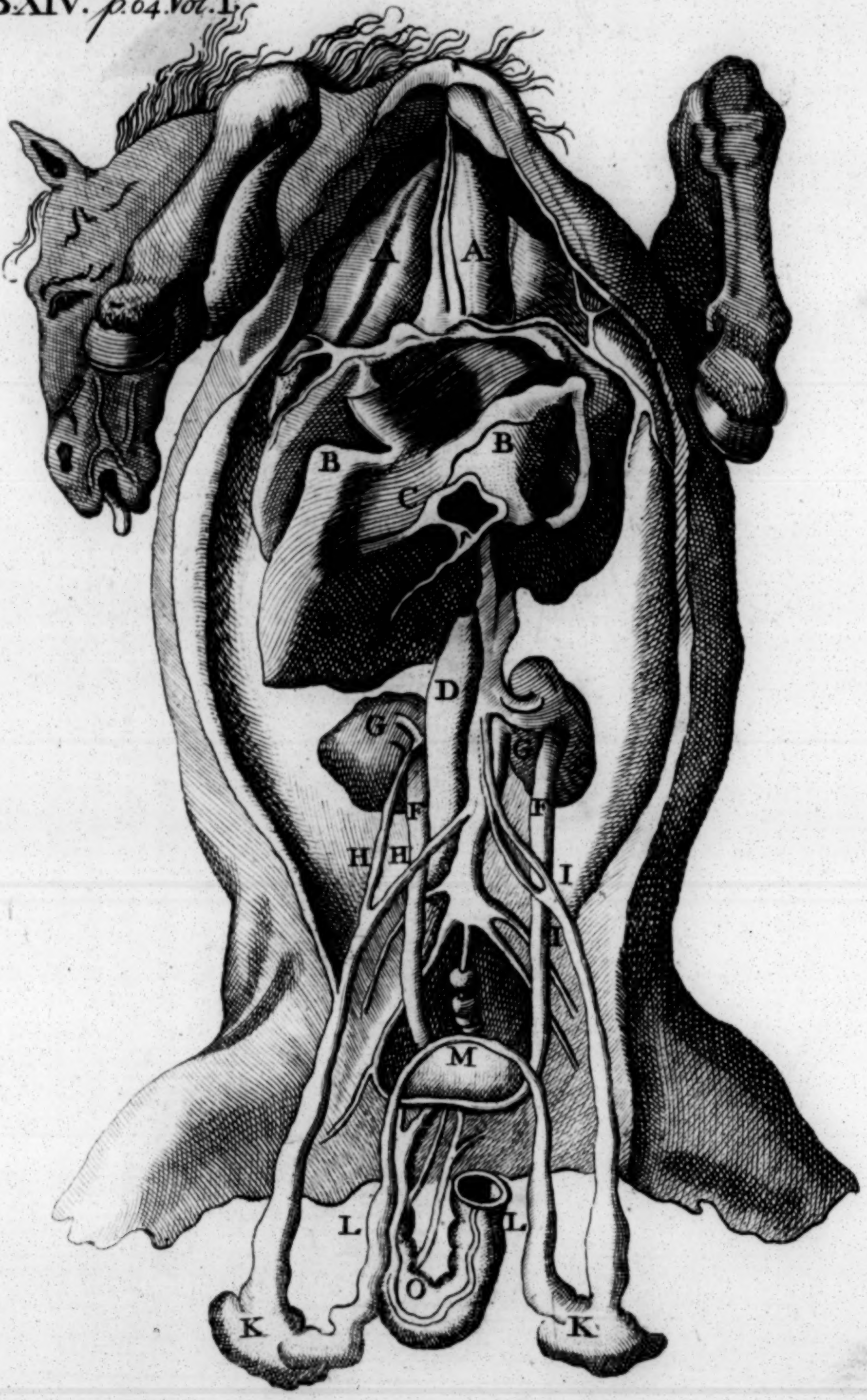


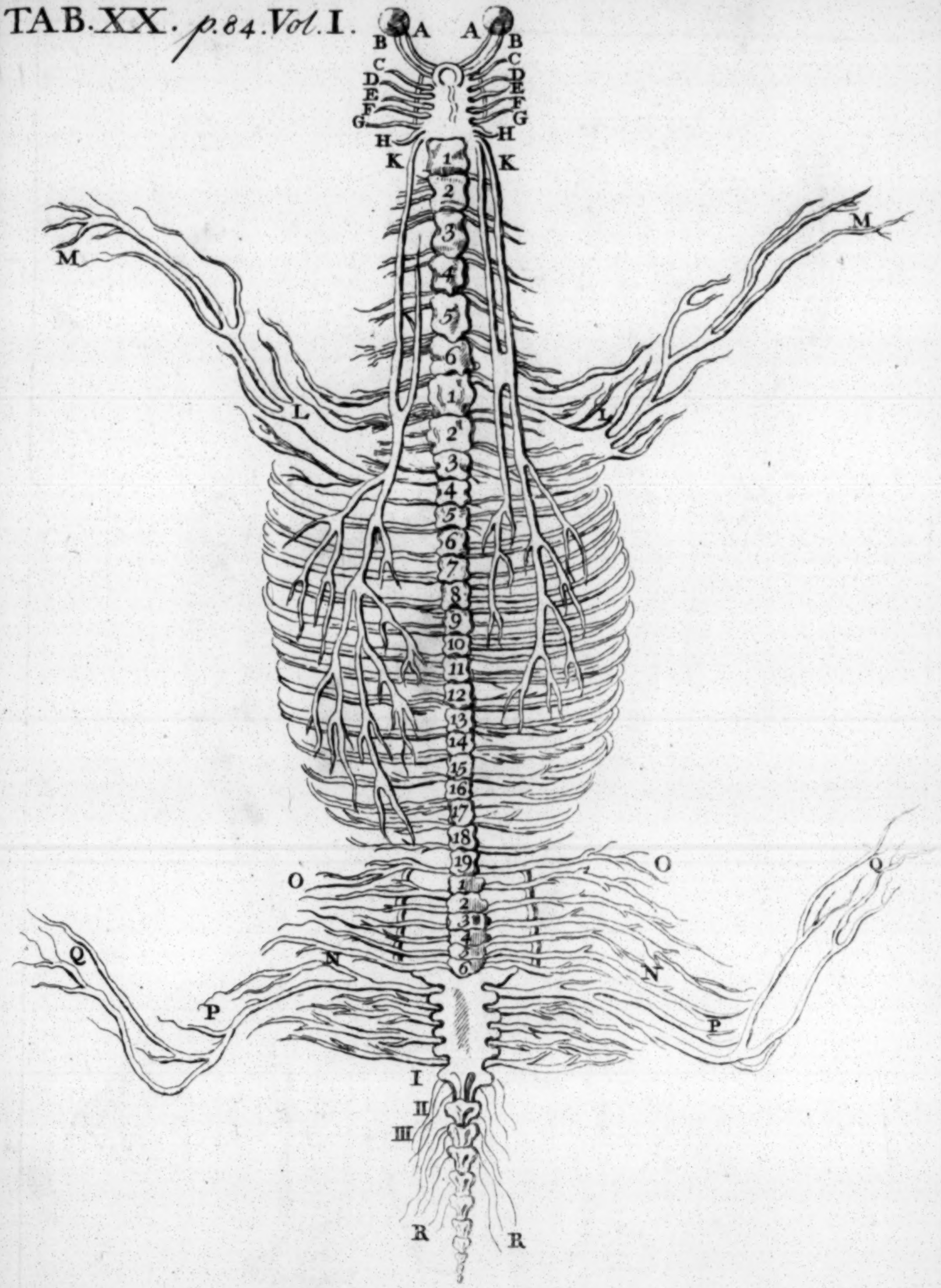
TAB. XIX. *p. 75.* *Vol.* I.



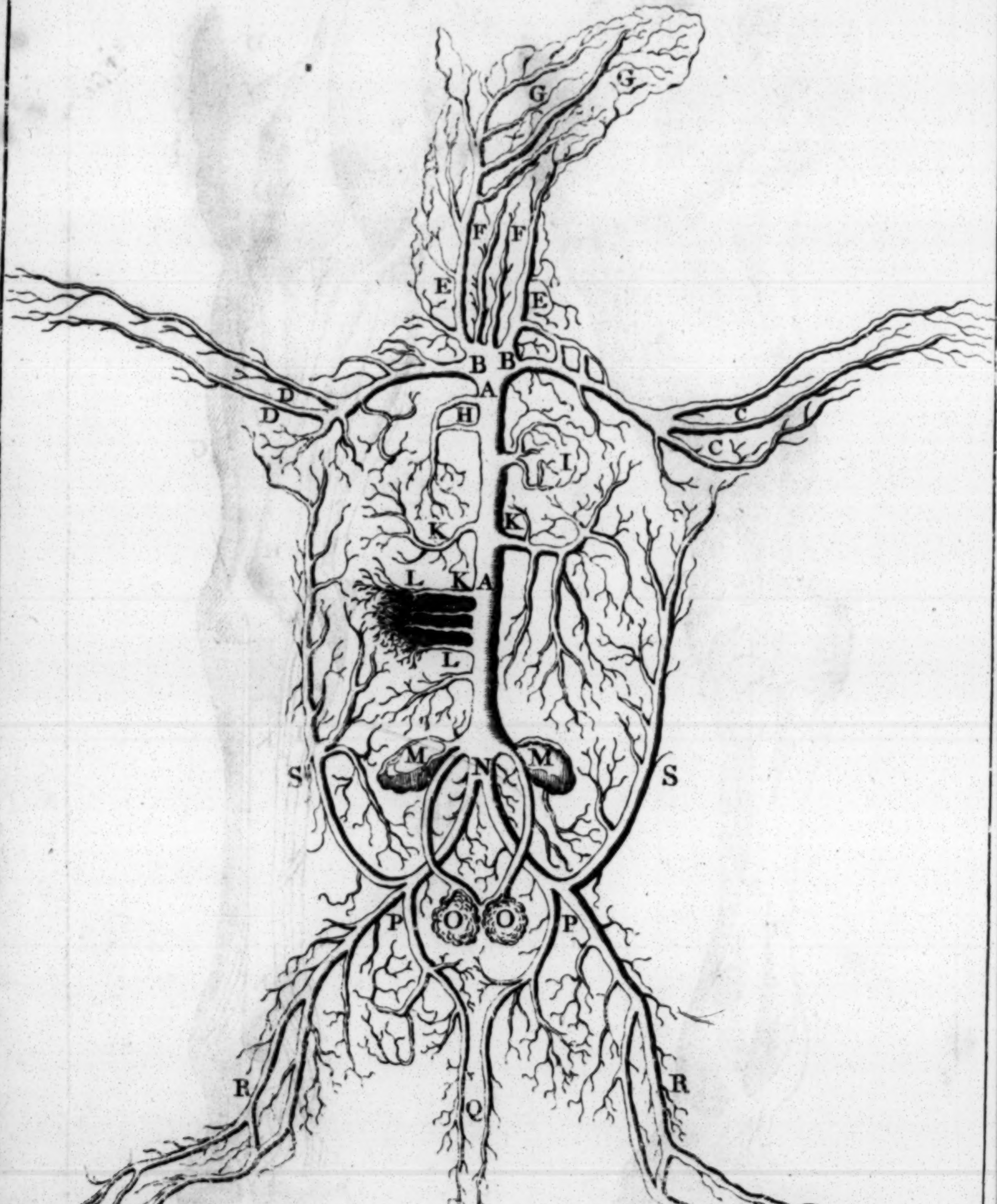
TAB.XIV. *p.64 Vol.I.*



TAB. XX. *p. 84. Vol. I.*



TAB. XVI. *p. 71. Vol.* I.



TAB. XI. *p. 55. Vol.* I.

Fig. I.

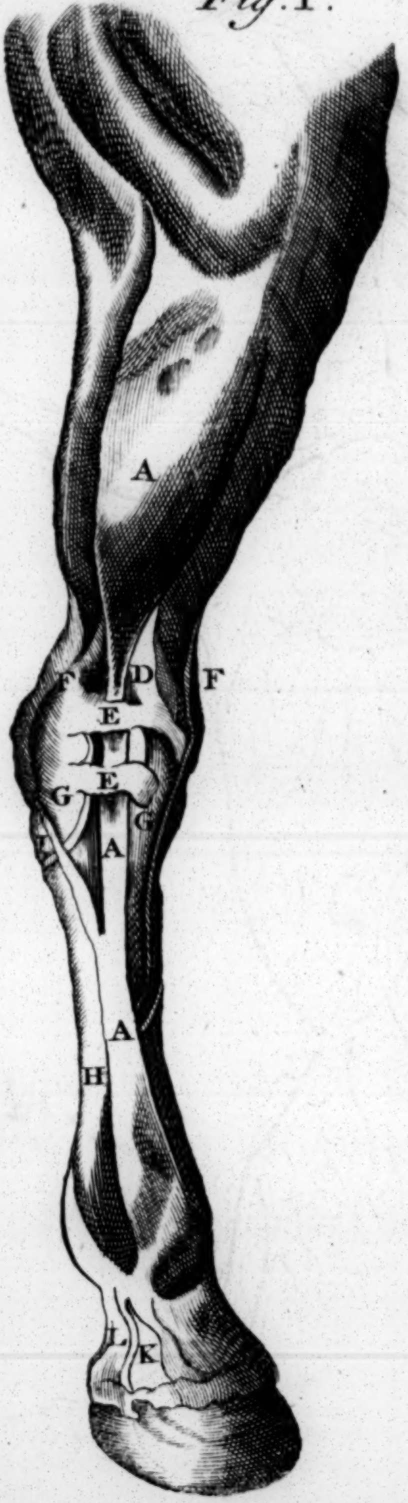
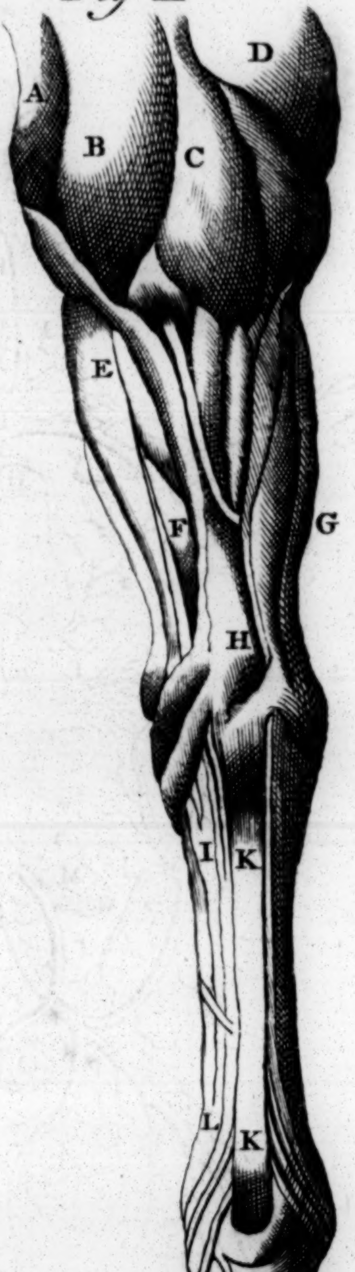
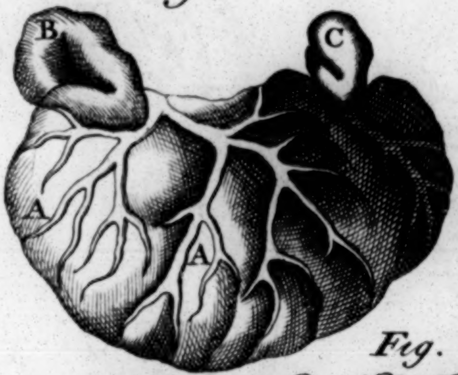


Fig II



TAB. XIII. *p. 63. Vol.* I.

Fig. I.



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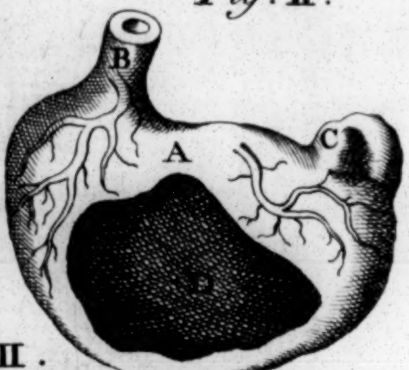

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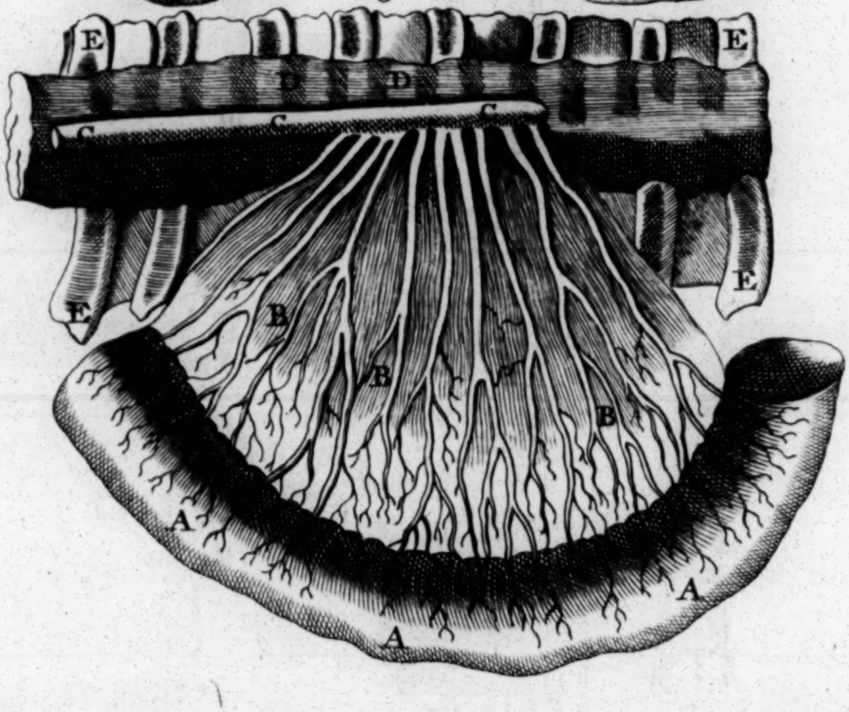
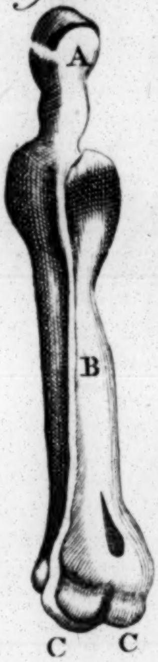


TAB. IV. *p.* 39. *Vol.* I.

Fig. III.



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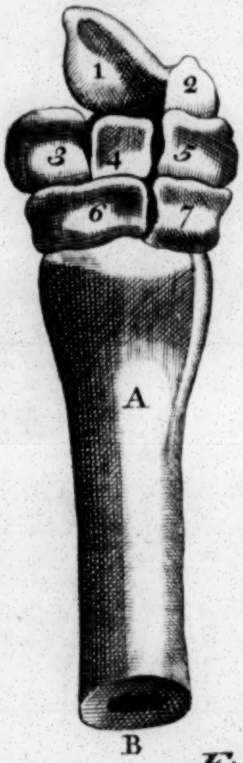


Fig. I.

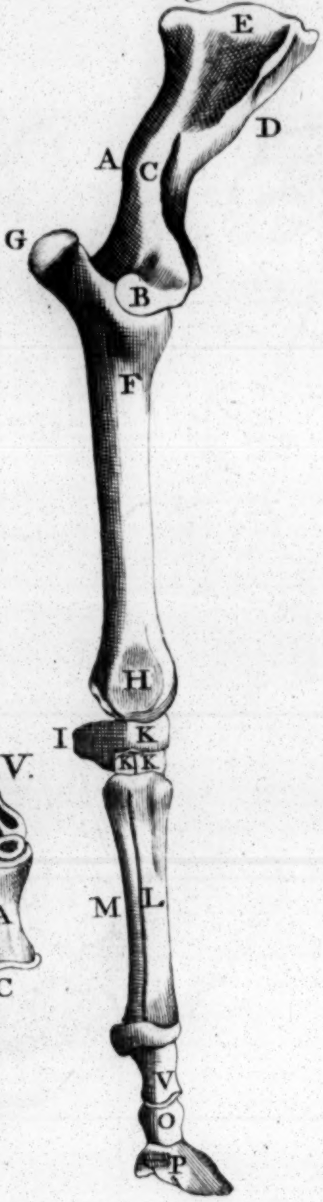


Fig. IV.

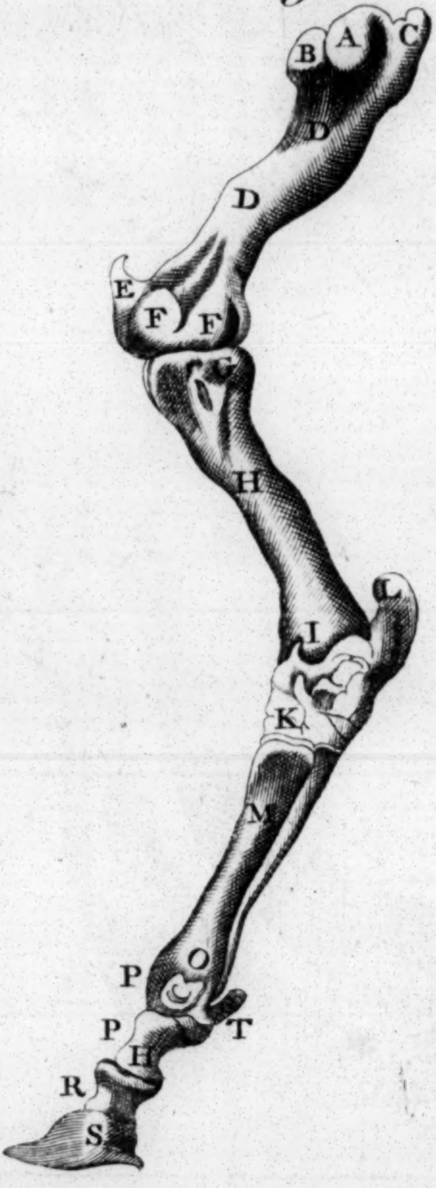
Fig. VI.

Fig. V.

Fig. VII.

TAB. VI. *p* 41. *Vol.* I.

Fig. I.



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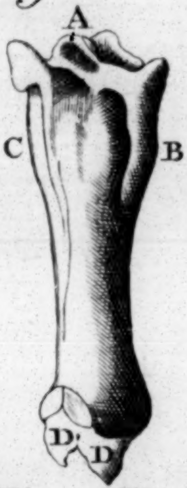

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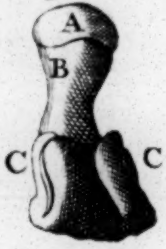


Fig. III

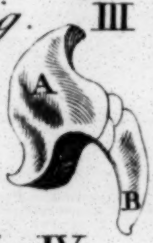
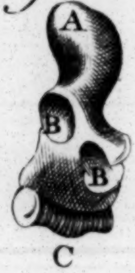


Fig. VI.



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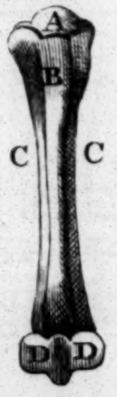

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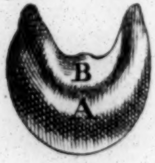
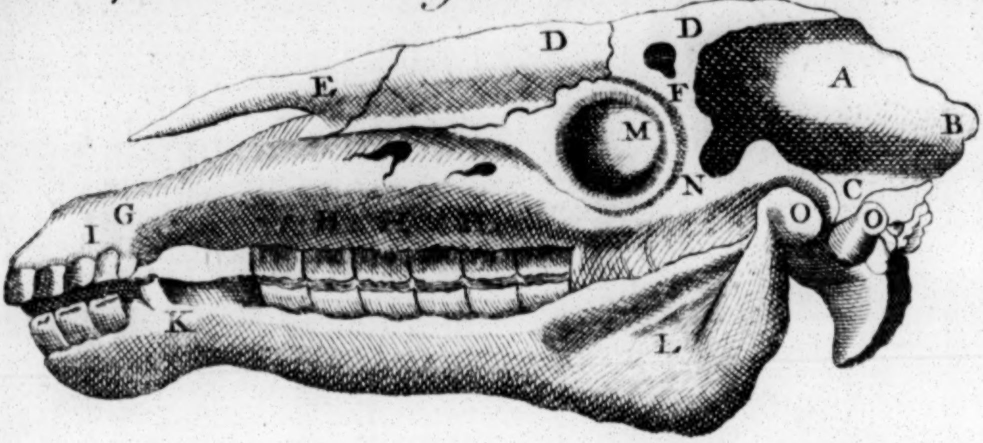


TAB. I. *p* 34. *Vol*. I.

Fig. I.



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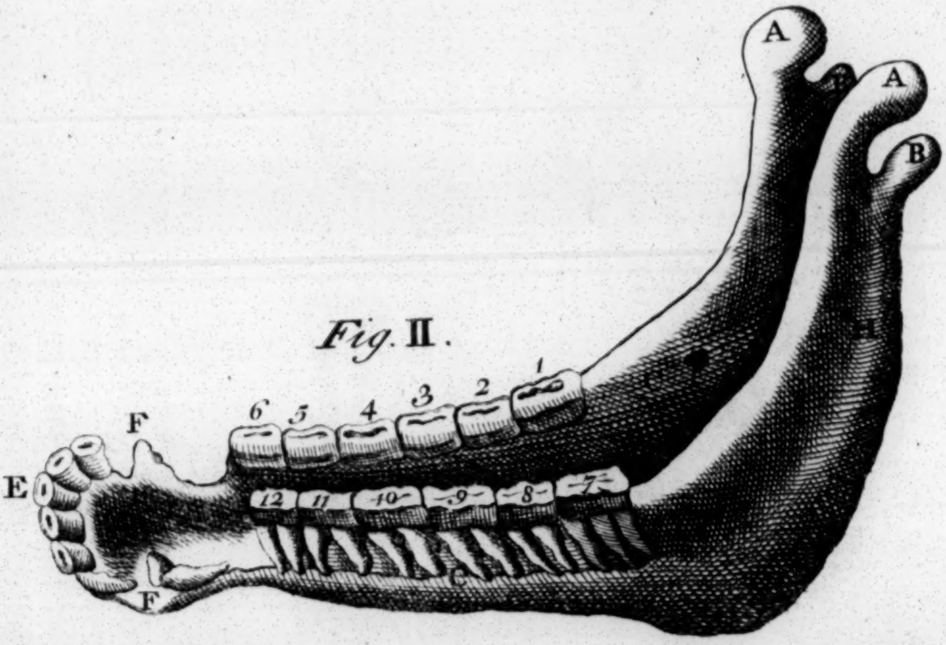


TAB.XV. *p.64. Vol.* I.

Fig. I.

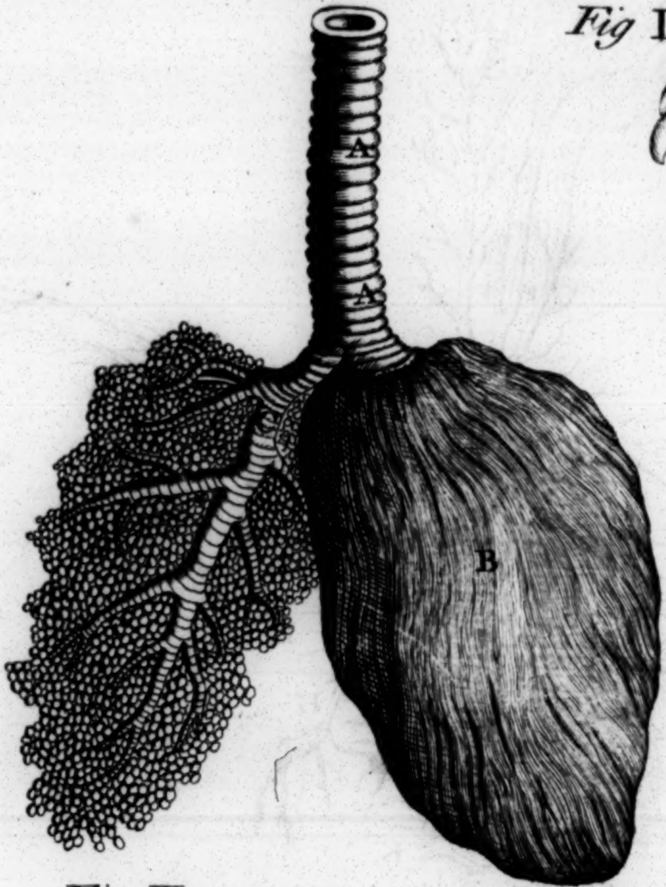


Fig II

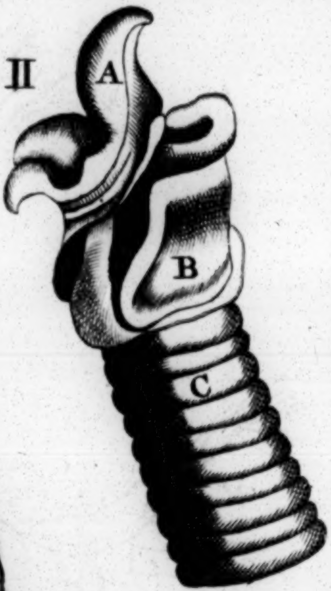
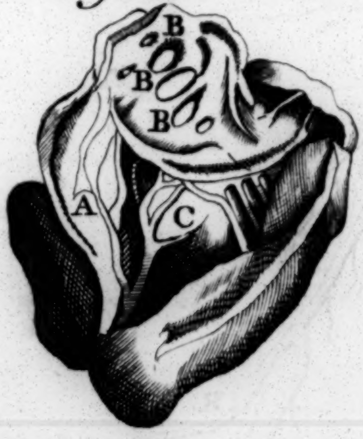


Fig. III.



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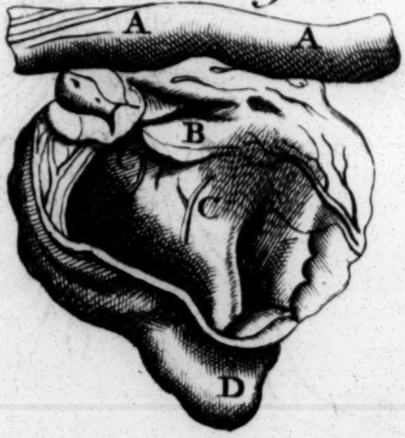

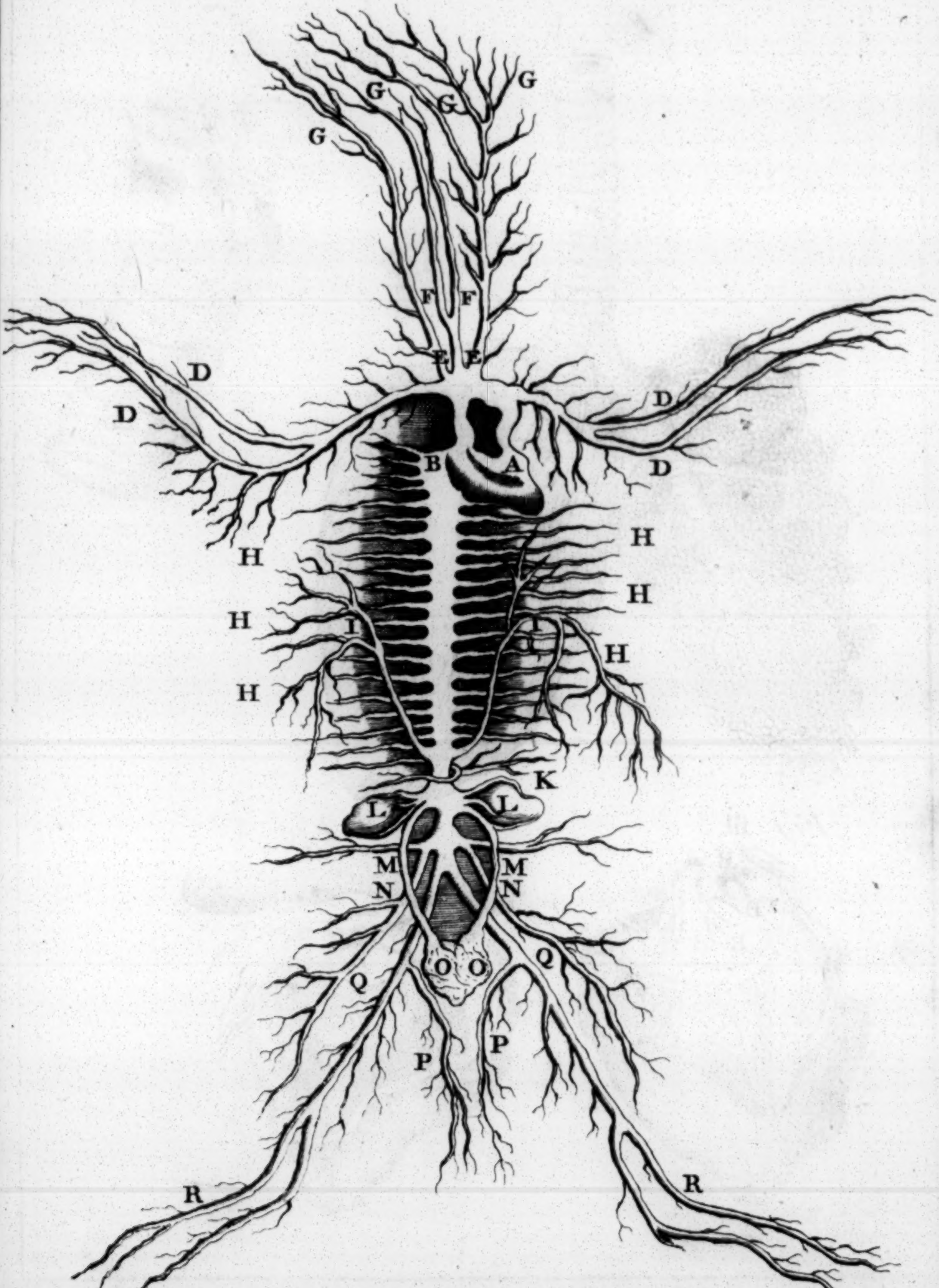
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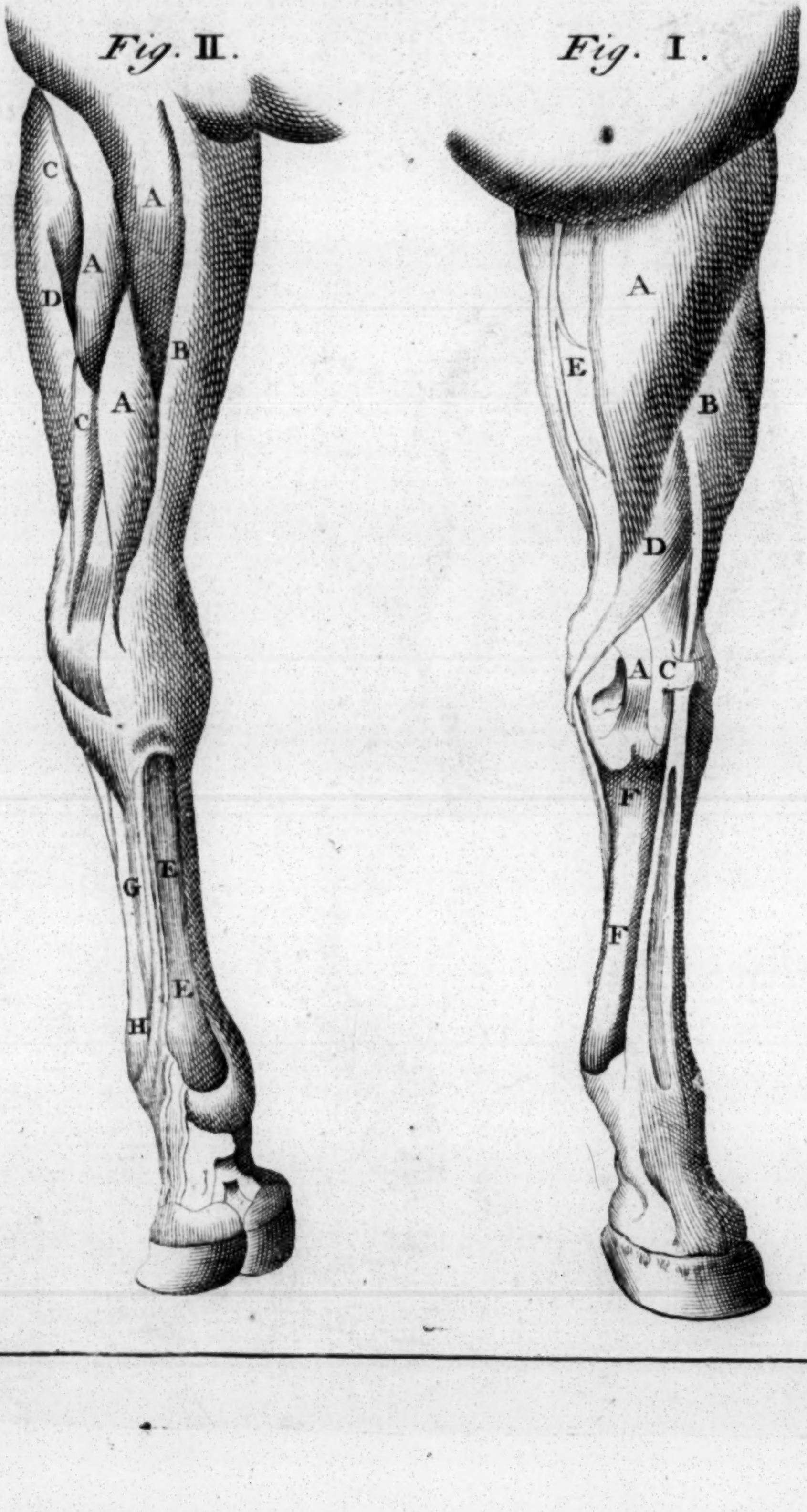
TAB. X. *p. 54. Vol.* I.



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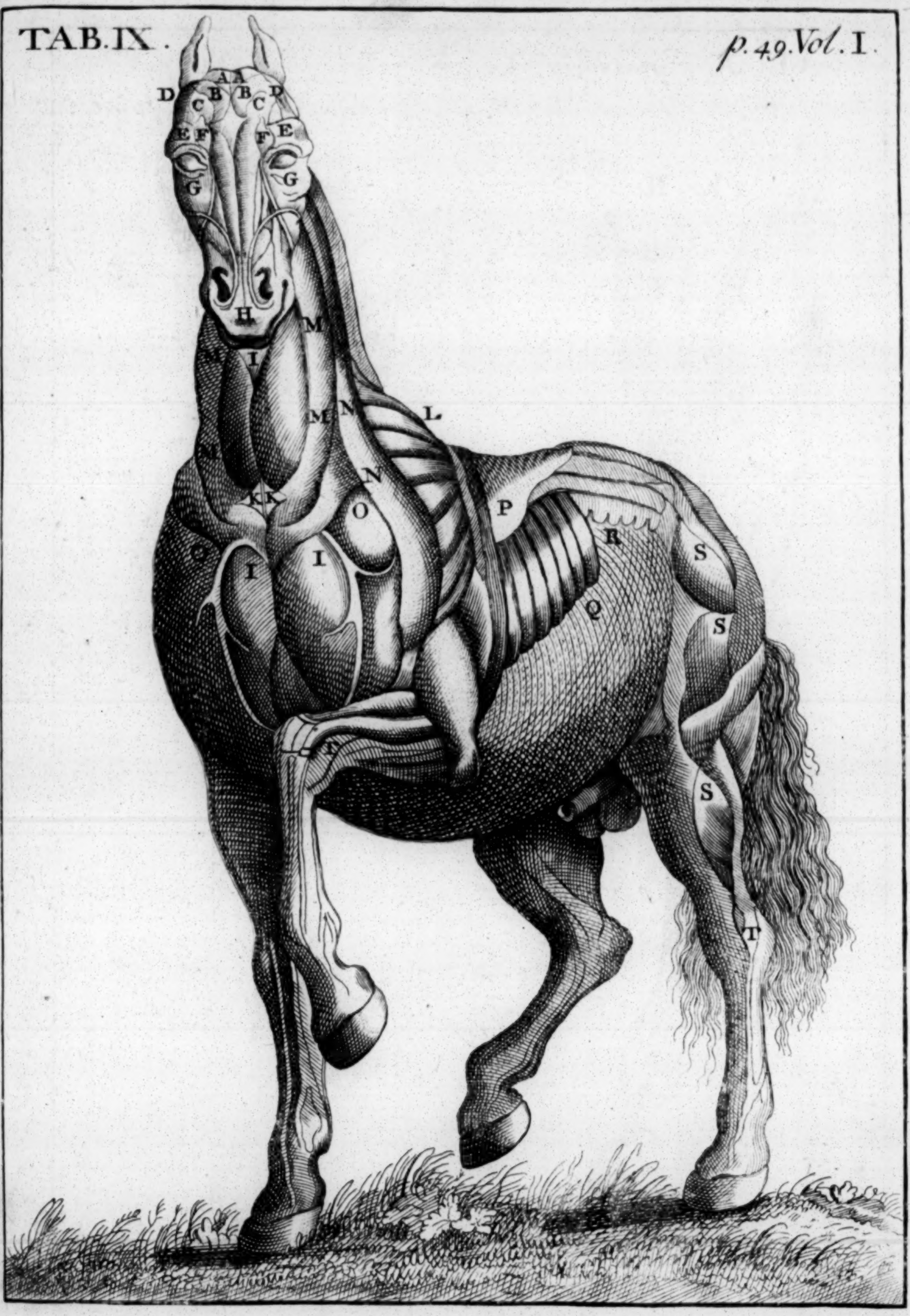
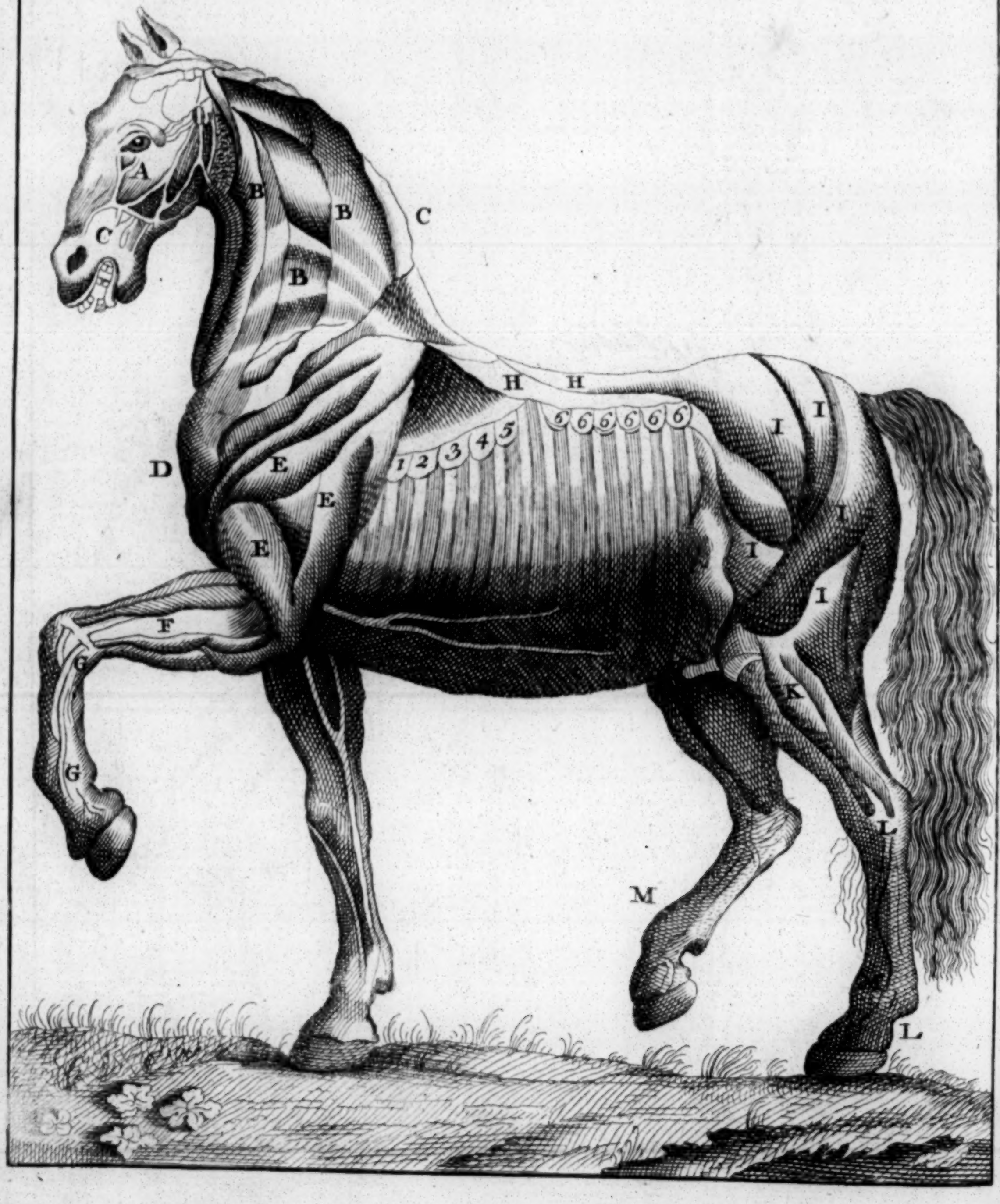
p. 49. Vol. I.



TAB. VIII. *p. 44. Vol.* I.



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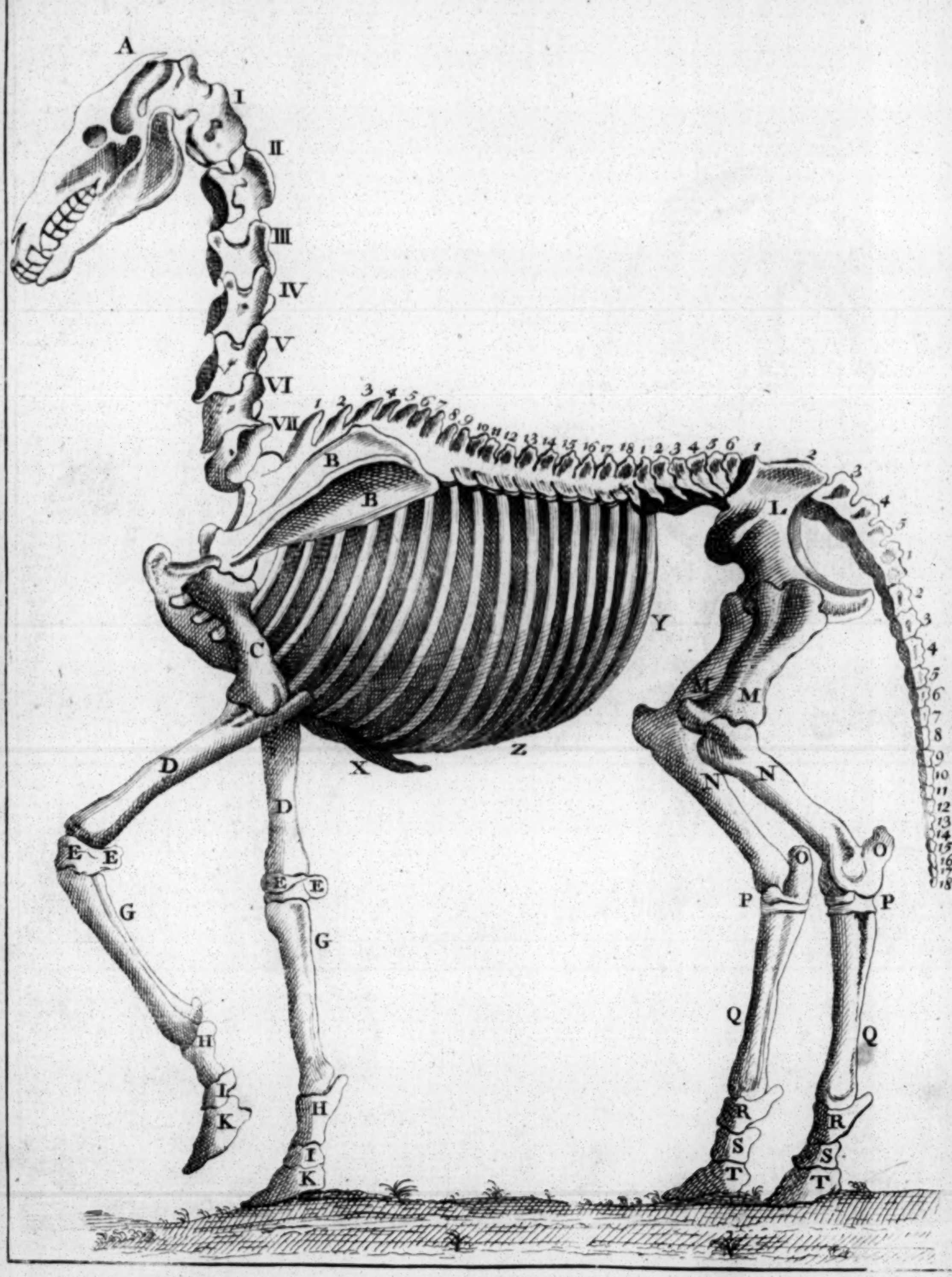
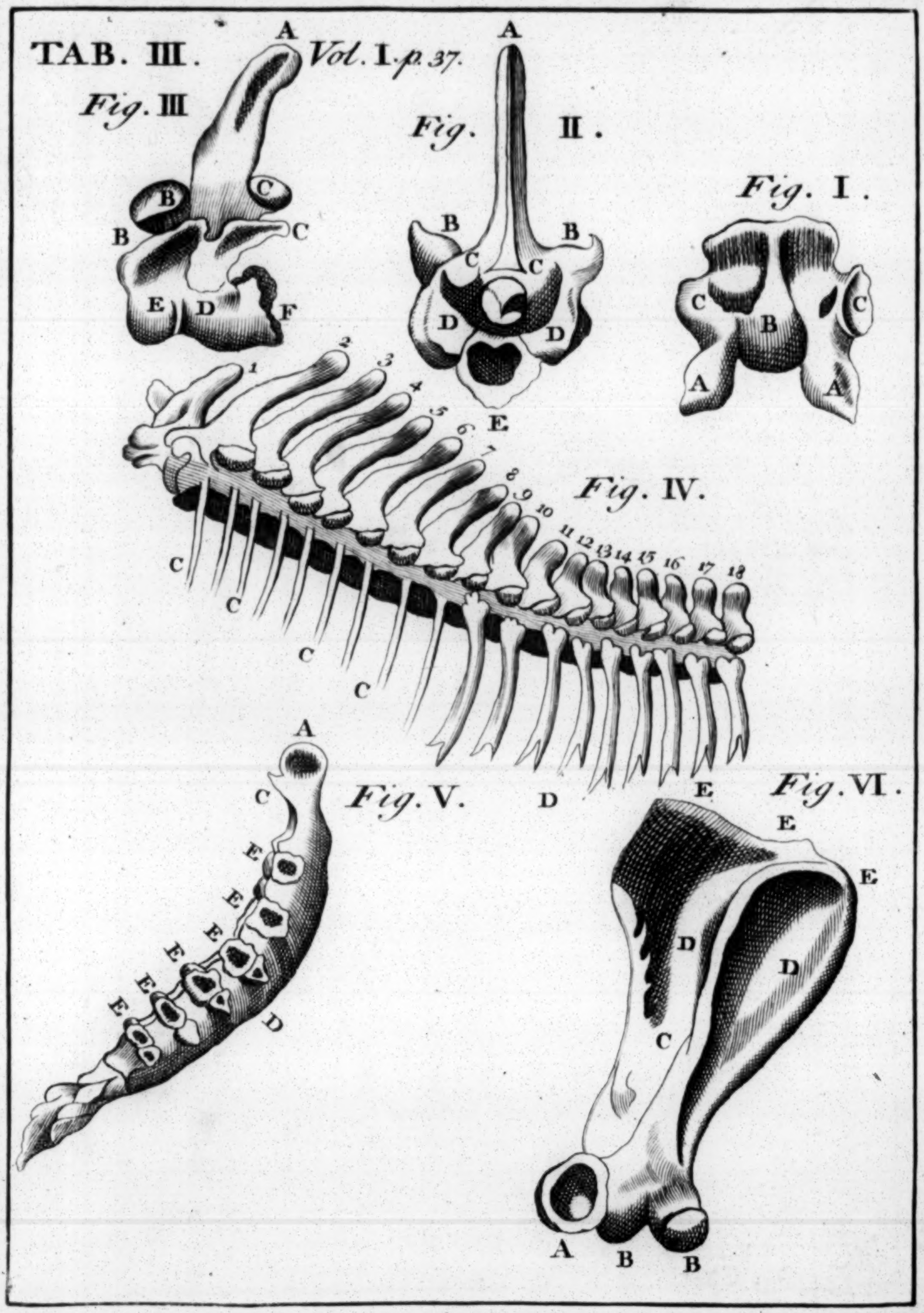
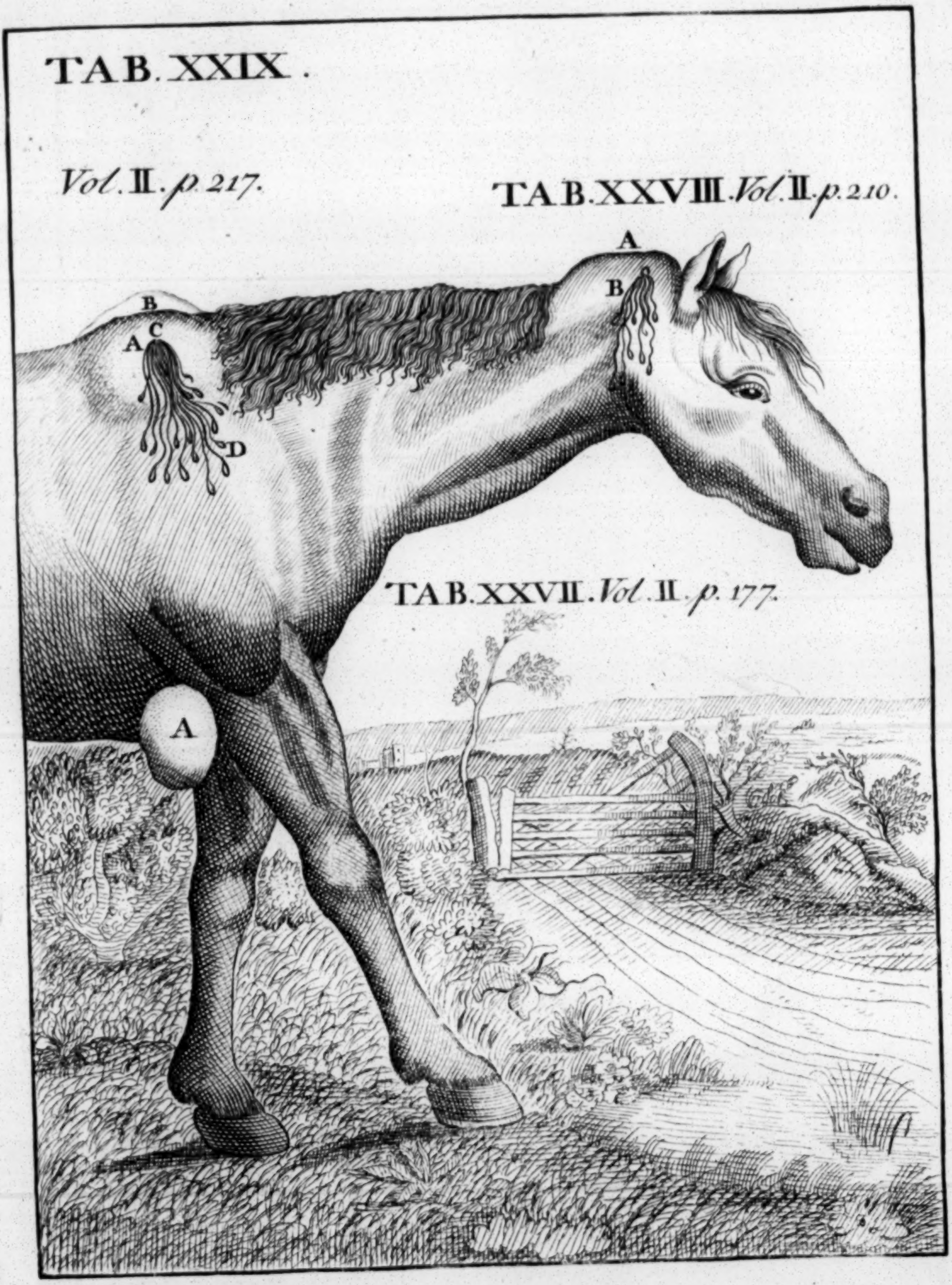


TAB. III. *Vol. I. p. 37.*





TAB. XXIX.

Vol. II. *p.* 217.

TAB. XXVIII. *Vol*. II. *p.* 210.

TAB. XXVII. *Vol*. II. *p.* 177.

TAB. XXX. Vol. I

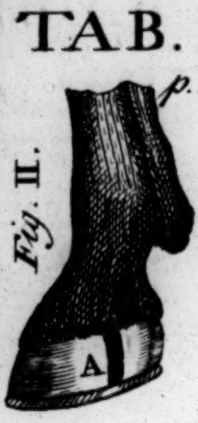
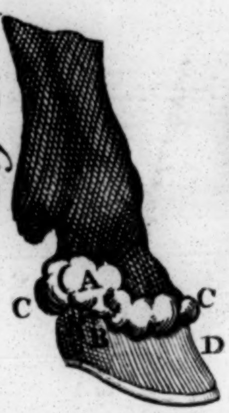


Fig. II.

p. 234.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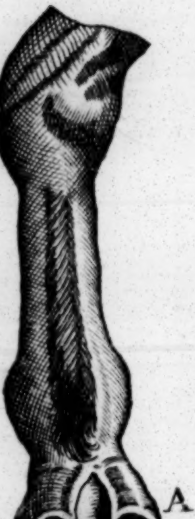
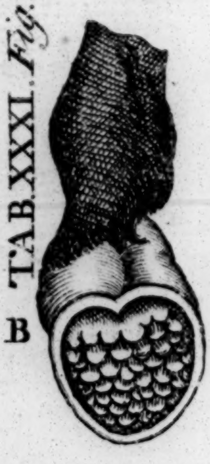
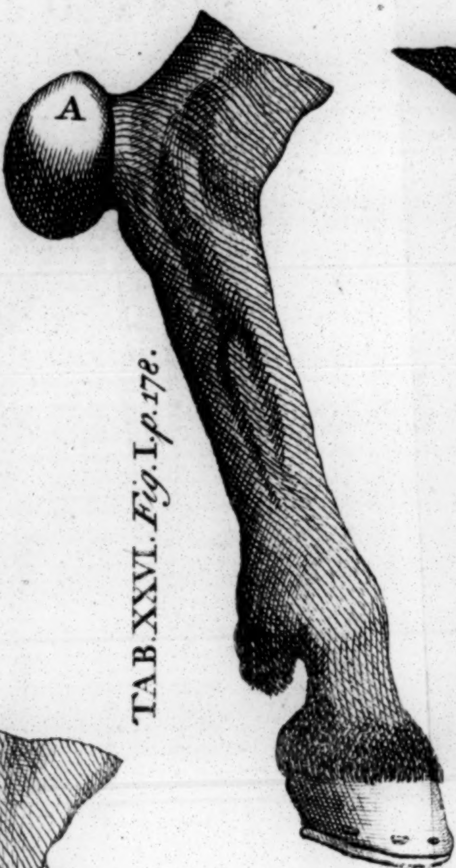

TAB. XXXI. Fig. I. p. 235.


TAB. XXXI. Fig. II. p. 235.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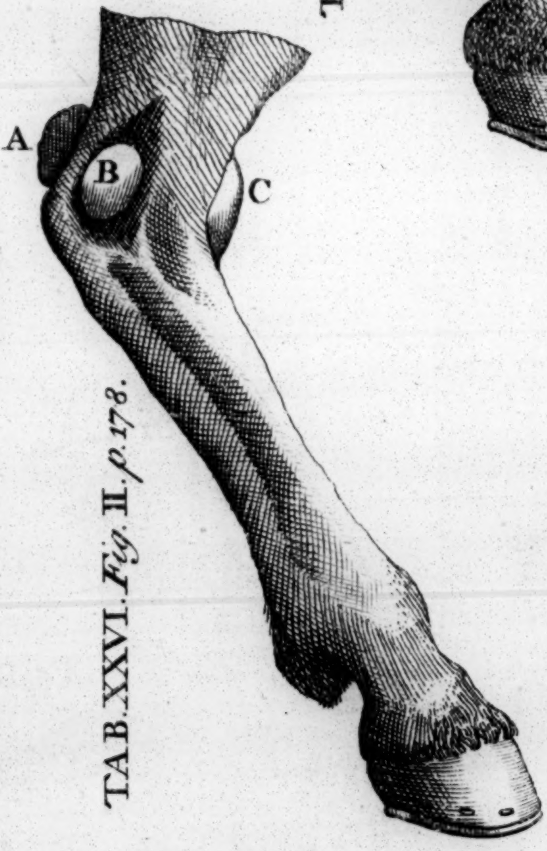
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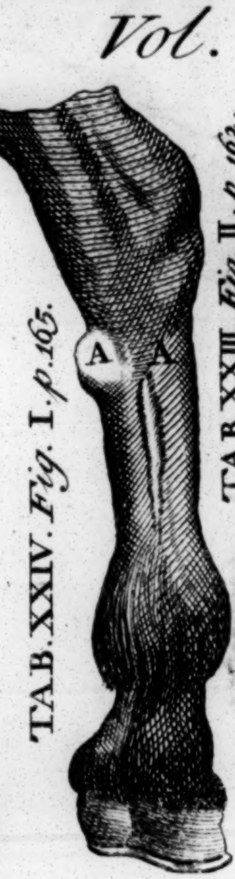
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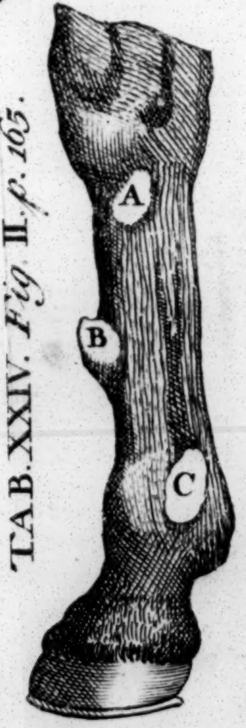
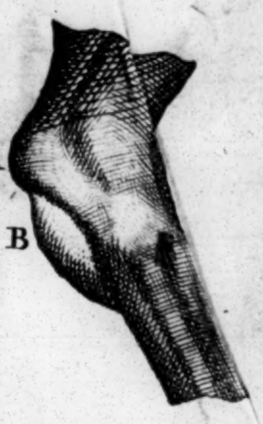
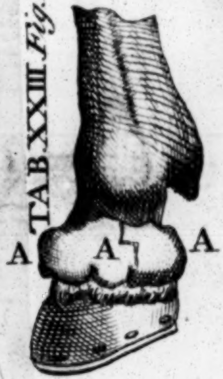

TAB. XXIV. Fig. II. p. 163.

TAB. XXIII. Fig. II. p. 162.
A

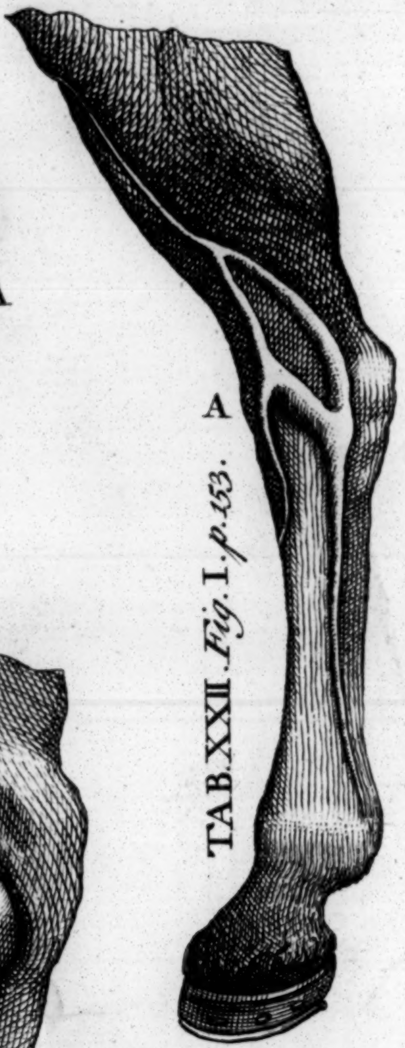
Vol. II.



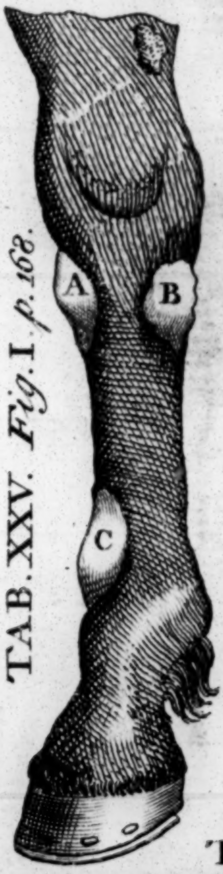
TAB.XXIII. *Fig*. II. *p. 162.*



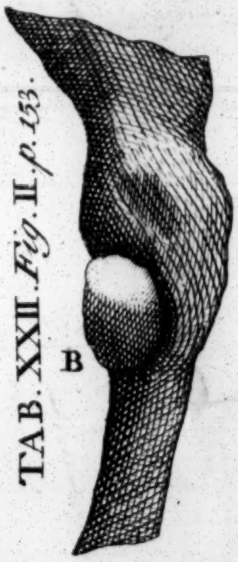
TAB.XXIII. *Fig*. I. *p. 162*



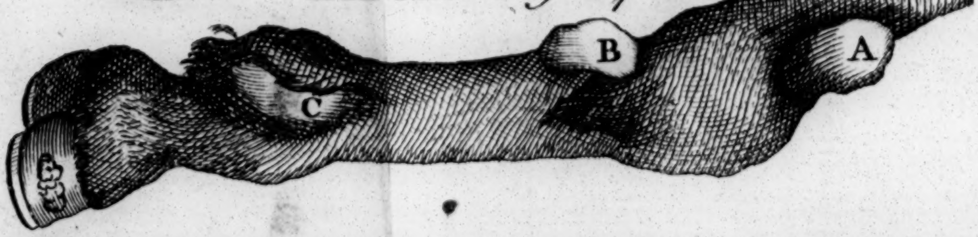
TAB.XXII. *Fig*. I. *p. 153.*



TAB.XXV. *Fig*. I. *p. 168.*

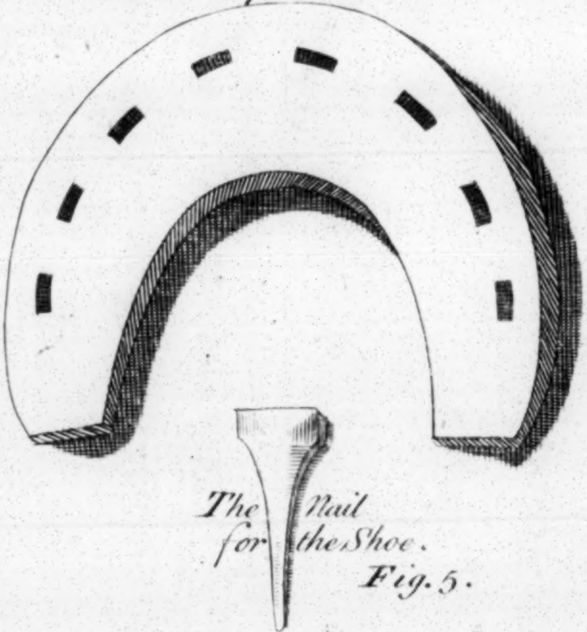


TAB.XXII. *Fig*. II. *p. 153.*



TAB.XXV. *Fig*. II. *p. 168.*

The new half Moon Shoe.



The Nail for the Shoe.

Fig. 4.

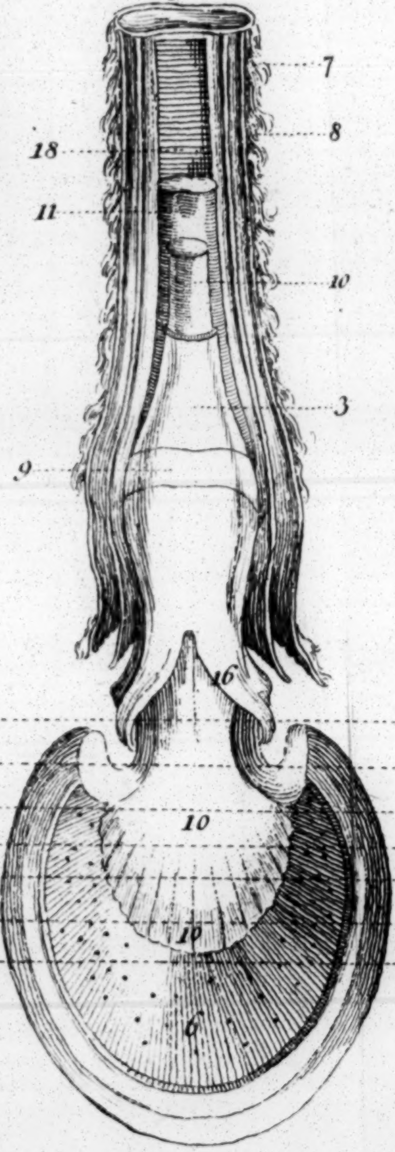
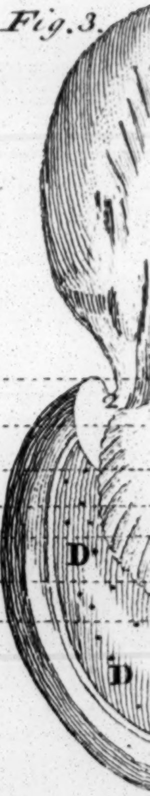


Fig. 3.



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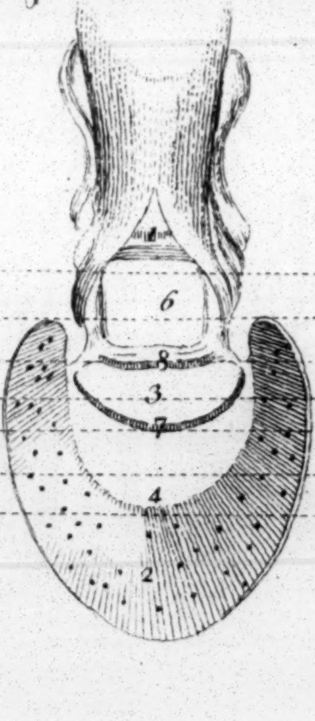
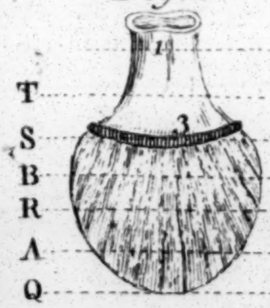


Fig. 6.



La Foſse Plate 1. p. 266.

Fig. 8.

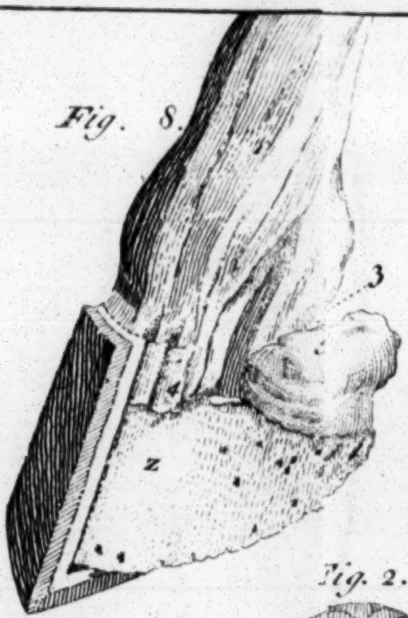


Fig. 7.

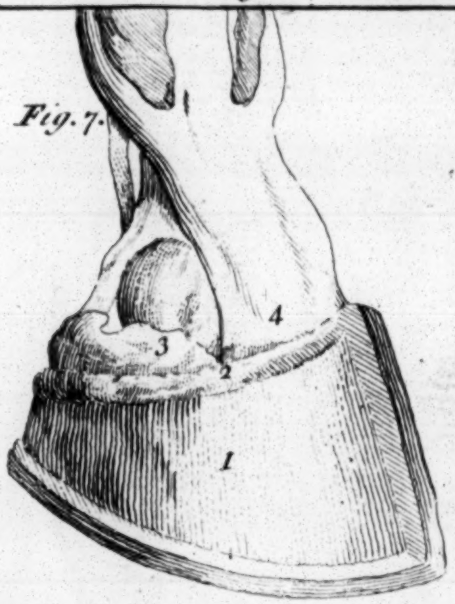


Fig. 3.

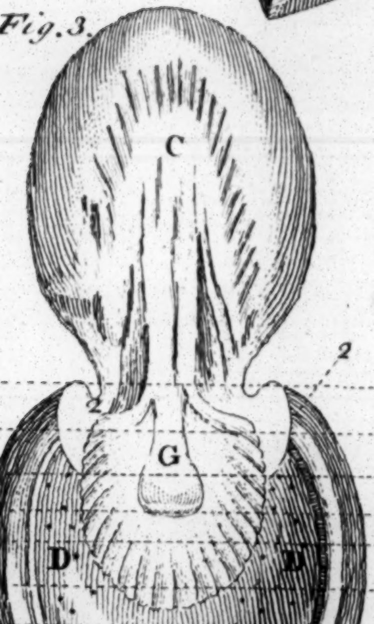


Fig. 2.

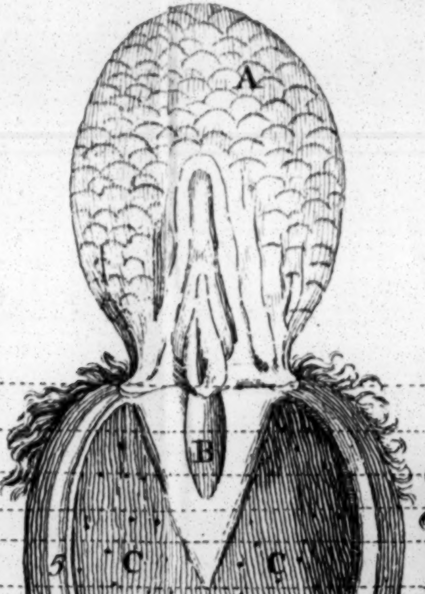
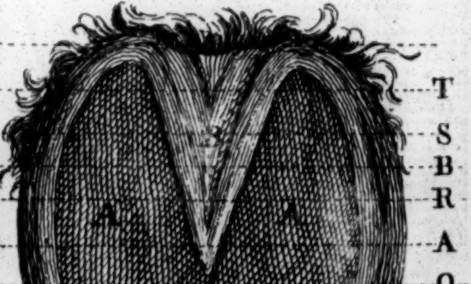


Fig. 1.



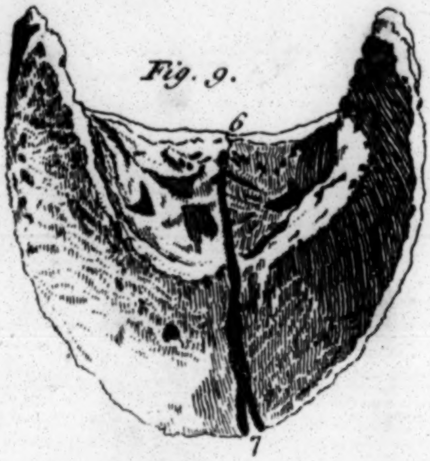
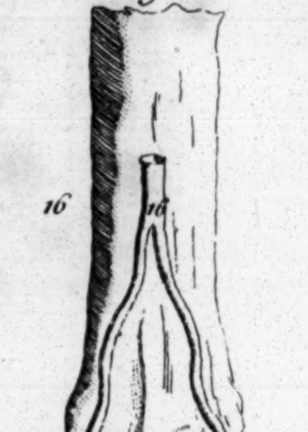


Fig. 9.



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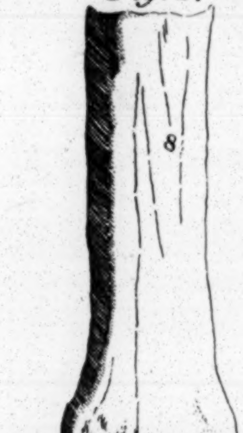


Fig. 2.

Fig. 5.

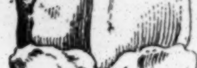


Fig. 6.

La Foſse Plate 2. p.268.

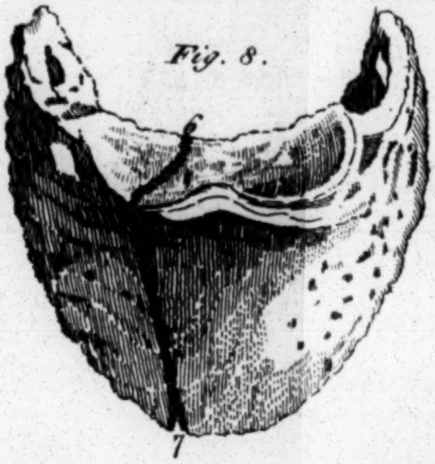


Fig. 8.

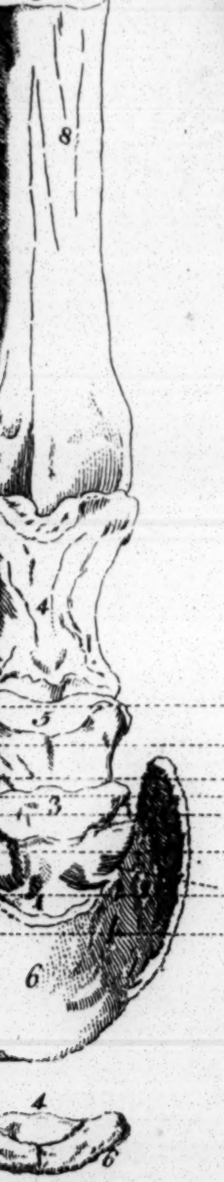
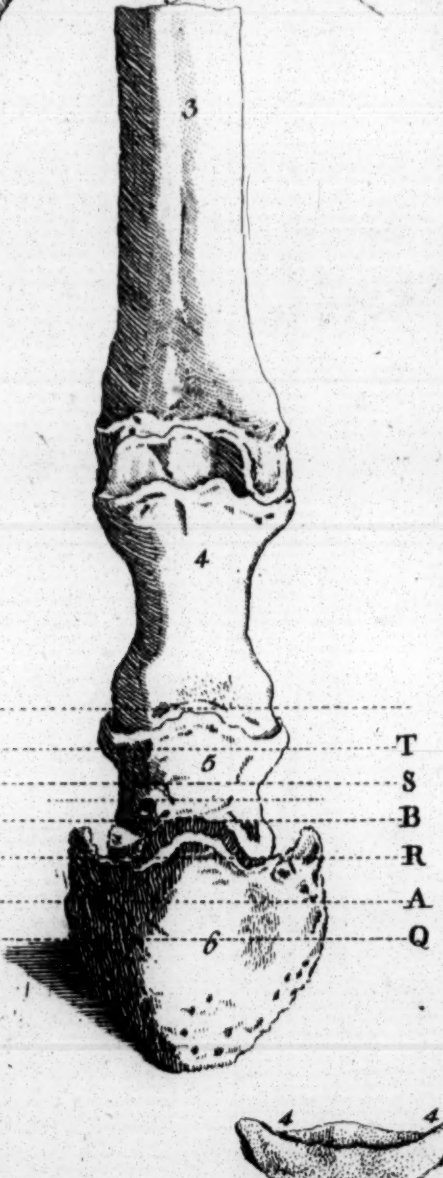


Fig. 2.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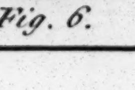
Fig. 6.

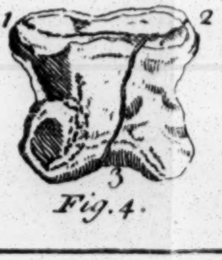
Fig. 4.

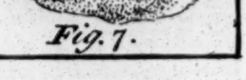
Fig. 7.

La Foſse Plate. 3. p 30.